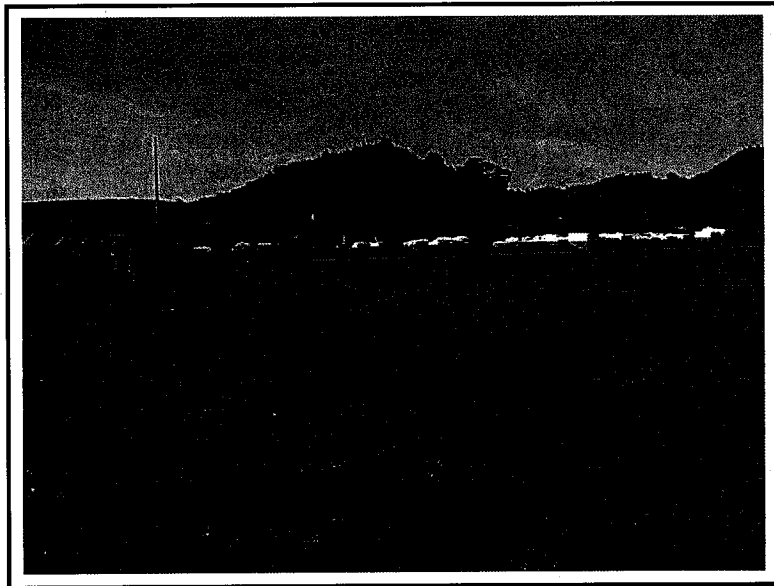


***FINAL***

**Second Five-Year Review Report  
for  
MGM Brakes Superfund Site  
Cloverdale, Sonoma County, California**



Prepared by: US Army Corps of Engineers, Seattle District  
Seattle, Washington

Prepared for: US Environmental Protection Agency, Region IX  
San Francisco, California

July 10, 2008

# Five-Year Review Report

Second Five-Year Review Report  
For  
MGM Brakes Superfund Site  
City of Cloverdale  
Sonoma County, California

July 10, 2008

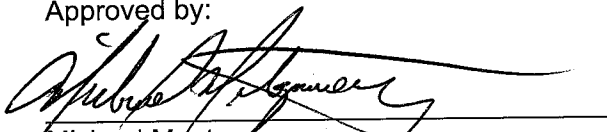
*PREPARED BY:*

United States Army Corps of Engineers (USACE)  
Seattle District  
Seattle, Washington

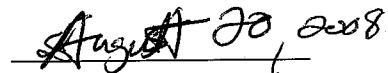
*PREPARED FOR:*

United States Environmental Protection Agency (USEPA)  
Region IX  
San Francisco, California

Approved by:

  
Michael Montgomery  
Chief, Federal Facilities and Site Clean-up Branch  
Superfund Division

Date:

  
August 20, 2008

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## List of Acronyms and Abbreviations

µg/l	Micrograms per Liter
C&A	Covenant and Agreement
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DCB	Dichlorobenzene
DCE	Dichloroethene
DTSC	Department of Toxic Substances Control
EKI	Erler and Kalinowski, Incorporated
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
FT	Feet/foot
FYR	Five Year Review
HLA	Harding Lawson and Associates
IAG	Interagency Agreement
IC	Institutional Control
IHII	Indian Head Industries, Incorporated
MCL	Maximum Contaminant Level
mg/kg	Milligrams per Kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCRWQCB	North Coast Regional Water Quality Control Board
NPL	National Priorities List
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSWER	Office of Solid Waste and Emergency Response
PCB	Polychlorinated Biphenyl
PDT	Project Delivery Team
POC	Point of Compliance
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
ROD	Record of Decision
SARA	Superfund Amendments Reauthorization Act
SVOC	Semivolatile Organic Compound
TBC	To Be Considered
TCA	Trichloroethane

## **List of Acronyms and Abbreviations, Continued**

TCE	Trichloroethene
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

## **Executive Summary**

The U.S. Environmental Protection Agency, Region IX has conducted the second Five-Year Review of the MGM Brakes Superfund Site in Cloverdale, California. The purpose of this review is to determine whether the remedial actions implemented at the Site are protective of human health and the environment. This FYR is required because hazardous substances remain on-site above the risk-based levels determined in the Record of Decision as amended by the Explanation of Significant Differences, thereby preventing unlimited use and unrestricted exposure to both subsurface soils and groundwater. The methods, findings, and conclusions of the review are documented in this report. In addition, this report summarizes issues identified during the review and includes recommendations and follow-up actions to address them. The triggering action for this review was the completion of the first Five-Year Review report on 30 September, 2003.

The Site is located at the southern corner of the intersection of South Cloverdale Boulevard and Donovan Road in Cloverdale, Sonoma County, California. The MGM Brakes facility manufactured and cast aluminum brake components for large vehicles between 1965 and 1982. Wastewater containing polychlorinated biphenyls (PCBs) was discharged into the field south of the plant from 1965 to 1972. From 1972 until 1981, the use of ethylene glycol on site caused PCBs already in the soil to travel over a wide area both horizontally and vertically. Groundwater was subsequently found to be contaminated with dissolved volatile organic compounds (VOCs), especially trichloroethene (TCE), although a source area was never located.

The 1988 Record of Decision called for removal of soil contaminated with PCBs in excess of 10 mg/kg and characterization of VOCs in groundwater. An Explanation of Significant Differences (ESD) was published in 1995 which revised the soils remedy to leave in place but restrict exposure to soil deeper than 15 feet contaminated with PCBs less than 100 mg/kg. The ESD also declared monitored natural attenuation as the remedy for groundwater, which was to include periodic groundwater sampling, analysis, and evaluation. The need for the ESD was based on the difficulty in removing soil associated with bedrock below 15 feet and the results of additional groundwater investigations.

The remedy at the MGM Brakes Site is protective of human health and environment because all exposure pathways have been eliminated or controlled.

## Five-Year Review Summary Form

### SITE IDENTIFICATION

Site name (from WasteLAN): MGM Brakes Superfund Site

EPA ID (from WasteLAN): 0946

CERCLIS ID #: CAD000074120

Region: IX

State: CA

City/County: Cloverdale/Sonoma

### SITE STATUS

NPL status: ☒ Final ☐ Deleted ☐ Other (specify)

Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☐ Complete

Multiple OUs? ☐ YES ☒ NO Construction completion date: March 25, 1998

Has site been put into reuse? ☐ YES ☒ NO

### REVIEW STATUS

Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency

Author name: Janet Rosati

Author title: Remedial Project Manager

Author affiliation: USEPA Region IX

Review period:\*\* October 2004 to September 2008

Date(s) of site inspection: February 8, 2008

Type of review: ☒ Statutory ☐ Policy:

- ☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only  
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead  
☐ Regional Discretion

Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify)

#### Triggering action:

- ☐ Actual RA Onsite Construction at OU # ☐ Actual RA Start at OU#  
☐ Construction Completion ☒ Previous Five-Year Review Report  
☐ Other (specify)

Triggering action date (from WasteLAN): September 30, 2003

Due date (five years after triggering action date): September 30, 2008

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]



## **Five-Year Review Summary Form, cont'd.**

### **Issues:**

There are no issues.

### **Recommendations and Follow-up Actions:**

There are no recommendations and/or follow-up actions.

### **Protectiveness Statement(s):**

The remedy at the MGM Brakes Site is considered protective of human health and the environment because all exposure pathways have been eliminated or controlled.

### **Other Comments:**

No additional comments are noted.

MGM Brakes Superfund Site  
Cloverdale, Sonoma County, California  
Second Five-Year Review Report

## I. Introduction

This is the second site-wide Five-Year Review report of Remedial Actions for the MGM Brakes Superfund Site located in Cloverdale, Sonoma County, California.

The purpose of a Five-Year Review (FYR) report is to determine whether the remedy at a Superfund site continues to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in the FYR reports. In addition, FYR reports identify issues found during the review, if any, and identify recommendations to address those issues.

The United States Environmental Protection Agency (EPA) is preparing this FYR report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121(c) states:

*If the President Selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such a review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.*

The purpose and focus of FYRs are further defined in EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-03B-P (EPA 2001).

The EPA Region IX has conducted a review of the remedial action implemented at the MGM Brakes Superfund Site, located at the intersection of South Cloverdale Boulevard

and Donovan Road in Cloverdale, California. This review was conducted by the U.S. Army Corps of Engineers (USACE), on behalf of EPA, between January and July 2008. The USACE project delivery team (PDT), consisting of technical experts from Seattle District, prepared this FYR through an Interagency Agreement (IAG) between EPA Headquarters and USACE.

This second FYR report is a statutory review, following five years after the completion of the first FYR report signed September 30, 2003. This statutory review is required because the remedial action occurred after the Superfund Amendments Reauthorization Act (SARA) and resulted in hazardous substances being left on site above levels that allow for unlimited use and unrestricted exposure. The first FYR report (CH2M HILL 2003) is the primary source of information presented in Sections II (Site Chronology, up to June 2003), III (Background), and IV (Remedial Actions) of this report.

## II. Site Chronology

The following table summarizes, in chronological order, the major milestones or notable events for the MGM Brakes Site.

**Table 1 – Chronology of Site Events**

Event	Date
MGM Brakes facility manufactured and cast aluminum brake components	1962-1982
PCB contamination in on site soils is confirmed by IT Corporation	Sep 1981
Multiple remedial contractors working for the Potentially Responsible Parties (PRPs) conduct several phases of soil, surface water, and groundwater investigation and characterization at MGM Brakes Site and surrounding property	Nov 1981 - Oct 1984
Feasibility Study (FS) issued	Sep 1986
Revised FS (conducted to meet new Superfund Amendments Reauthorization Act [SARA]) issued	Apr 1988
Proposed Plan issued	May 1988
Record of Decision (ROD) for cleanup of soil and groundwater is issued for the Site	Sep 1988
Consent Decree for remedial design/remedial action (RD/RA) entered by the district court with TBG, Inc (TBG) and Indian Head Industries, Inc. (IHII) (the PRPs) agreeing to conduct the work	May 1990
TBG and IHII conduct further Site soil and groundwater investigation and characterization	Mar-Nov 1991
Casting plant building demolition RA work begins	Apr 1992
Soil excavation RA work begins	Feb 1993
Human Health Risk Assessment for PCBs in soil issued	Apr 1994

Event	Date
Quarterly groundwater monitoring of on- and off-site wells	Sep 1994 – Mar 1998
Final VOC Groundwater Monitoring Plan prepared by Erler & Kalinowski, Inc. (EKI) and submitted by TBG and IHII to EPA	Apr 1995
Recording of covenant and agreement to restrict use of MGM Brakes property	Jul 1995
Explanation of Significant Differences (ESD) modifying the 1988 ROD by leaving certain deep PCB-contaminated soils in place, imposing land-use restrictions, and identifying natural attenuation as the groundwater cleanup option	Aug 1995
EPA issues certificate of completion for demolition and excavation work	Mar 1998
EPA agrees to amend the 1995 Final VOC Groundwater Monitoring Plan to terminate analysis of pesticides and semivolatile organic compounds (SVOCs), and to reduce sampling frequency from quarterly to semi-annually	Mar 1998
Semi-annual groundwater monitoring of on- and off-site wells	Mar 1998-present
EPA agrees to allow for termination of analysis for PCBs in groundwater	Aug 1999
EPA conducts site inspection for first five-year review	Jun 2003
First five-year review completed	Sep 2003
Further reductions in groundwater sampling approved by EPA	Dec 2003
EPA agrees to allow abandonment of all wells except B-50 and B-73. Abandonment of well B-45R was conditional upon receipt of acceptable TCE concentrations during October 2006 sampling event	Sep 2006
Wells B-31, B-45R, B-71-1, B-72-1, B-75, B-76, B-77A, B-77B, and B-78 are abandoned	October 11-12, 2007
EPA conducts site inspection for second five-year review	Feb 2008
Second five-year review completed (this document)	July 2008

### III. Background

#### *Physical Characteristics*

The MGM Brakes Superfund Site (Site) is an approximate five acre tract of land located in Sonoma County, in the southern portion of the City of Cloverdale, California. Cloverdale is located in the Alexander Valley 80 miles north of San Francisco. The entrance to the Site is located at the southern corner of the intersection of Donovan

Road and South Cloverdale Boulevard (former Highway 101), as shown in Figure 1. Cloverdale is an agricultural community of 6,831 residents as of the 2000 census (US Census Bureau 2000). The Site is located less than one mile west of the Russian River but is not within the river's 100-year flood zone. The Site is topographically flat and vegetated with grass except for the northeastern corner, which is covered by an asphalt pad that once served as a parking lot. Two concrete-lined drainage ditches exist just inside the eastern and southeastern perimeter fence line. Adjacent property consists mainly of multi-unit residential buildings, office buildings, a hotel, fueling stations, and convenience stores.

### *Land and Resource Use*

Prior to 1961, 22 acres of land including the five acres which comprise the MGM Brakes Superfund Site was an American Indian reservation. From 1962 until operations ceased on site in 1982, the MGM Brakes facility manufactured and cast aluminum brake components for large motor vehicles. Prominent features of the facility included a casting plant building, seven above-ground storage tanks, a cooling tower, and a storage shed.

All buildings and related appurtenances have been removed from the Site as part of the remedial action. A Covenant and Agreement was recorded in Sonoma County on July 12, 1995 to restrict use of those portions of the Site where contaminated soil was left in place. The MGM Brakes property is completely enclosed by a chain link fence and is accessed by one of two gates. The Site boundary is defined as the extent to which groundwater contamination has come to be located, and extends beyond the fenced MGM Brakes property on to an adjacent vacant lot. The MGM Brakes property is and has been vacant and available for sale. The water-bearing unit underlying the Site is not used as a public drinking water source. The South Cloverdale Water Company provides drinking water from two wells located one-half to three-quarters of a mile upgradient and to the east of the Site. The municipal wells are reportedly screened in a deeper water bearing unit. The water from these wells is treated by chlorination and serves approximately 40 homes near the Site. No downgradient water supply wells have been identified.

Based on site characterization data, the dominant groundwater flow direction is to the southeast. The hydraulic gradient magnitude averages 0.012 ft/ft and is slightly greater during the spring months. Surface water is drained by two concrete-lined ditches following the eastern and southeastern perimeter fence lines, and also by an unlined ditch paralleling South Cloverdale Boulevard (Figure 2). All three ditches channel surface water away from the Site to the southeast to the nearest surface water body, Icaria Creek, which ultimately discharges to the Russian River.

### *History of Contamination*

When the MGM Brakes facility was in operation, hydraulic fluids containing PCBs were reportedly used in the casting machines between 1965 and 1972. These hydraulic fluids leaked from the casting machines in the normal course of plant operations and then collected, together with water used to cool the dies between castings, in floor drains. Following gravity separation of oils and grease, the wastewater containing PCBs was discharged to the ground adjacent to the casting plant via a drain line. The use of hydraulic fluid containing PCBs was reportedly discontinued by 1973, but wastewater containing ethylene glycol (the hydraulic fluid later used in the casting machines) continued to be discharged in the same manner until 1981. The practice of discharging wastewater onto the vacant land surrounding (mostly to the south) the casting building is believed to be the main cause of contamination at the Site. See Figure 2 for the location of the former MGM Brakes casting building with respect to other Site features.

In response to a citizen complaint, the North Coast Regional Water Quality Control Board (NCRWQCB) and the California Department of Fish and Game (CDFG) conducted a site inspection of the property on August 11, 1981. During the inspection they noted the presence of oily soil. In response to these observations, MGM Brakes personnel dug up the soil and stockpiled it on site. Samples related to the disposal process indicated the soil was contaminated with PCBs. In response to these findings, Harding Lawson and Associates (HLA) conducted additional studies from 1981 to 1983. PCB contamination was detected in surface water runoff, surface and subsurface soil, and inside the casting plant building. Although groundwater was also tested at that time, PCBs were not detected in this medium (HLA 1983). In 1986, volatile organic compounds (VOCs) were detected in groundwater at the southeast property boundary and on portions of adjacent properties to the south and southeast of the Site. The source of the VOCs in groundwater was never identified. These VOCs are listed under *Basis for Taking Action*.

### *Initial Response*

In November 1981, the State issued a Cleanup and Abatement Order (No. 81-216) which required MGM Brakes to cease discharge of contaminated wastewater and remove oily soil from the property. In the fall of 1981, the stockpiled soil was transported to the Casmalia hazardous waste disposal facility in Santa Barbara County. In addition, the order required submittal and implementation of a remedial action plan and groundwater monitoring for the presence of PCBs (HLA 1983). Soil, surface water and groundwater samples were collected and a seismic refraction study was completed by HLA in 1982. A remedial action plan was submitted to the State in April 1982. In

response to State comments, subsequent actions to support the development of the remedial action plan included additional groundwater monitoring, collection of soil samples, installation of surface water runoff collection systems, initiation of a study to determine whether the spread of PCB contamination was caused by the presence of solvents in soil, and cleanup of the interior of the MGM Brakes casing plant.

The Site was proposed for the National Priorities List (NPL) on December 30, 1982 and was officially included on the NPL in September 1983. At that time, EPA assumed lead responsibility for oversight of the site investigation, characterization, and cleanup activities.

The EPA conducted limited field investigation during the course of evaluating remedial alternatives. The original Feasibility Study (FS) was initiated in 1985 and released in 1986. The first FS identified incineration as the Agency's preferred alternative. Due to strong opposition to incineration as well as other comments submitted during the public comment period, EPA decided to prepare a revised FS. In May of 1988, EPA released the revised FS which evaluated a list of alternatives including capping, excavation and on-site fixation, in-situ fixation, on-site incineration, and excavation and off-site disposal. The preferred remedy as stated in the May 1988 Proposed Plan was excavation and off-site disposal, and no adverse comments were received during the public comment period.

#### *Basis for Taking Action*

The basis for taking action at the MGM Brakes Site was the release of hazardous substances into the environment and the fact that the Site posed, or potentially posed, a threat to human health and the environment via inhalation, ingestion, and direct contact. Surface and subsurface soils contained PCBs, a probable human carcinogen, at concentrations up to 4,800 milligrams per kilogram (mg/kg). The concrete slab of the casting plant was contaminated with concentrations of PCBs up to 5,400 mg/kg. These values far exceeded the 10 mg/kg level that EPA established in 1988 as the national cleanup level for PCBs in non-restricted residential soils (TSCA 1988).

VOCs were first detected in groundwater in 1986 with concentrations ranging up to 190 micrograms per liter. The detected VOCs were benzene, chlorobenzene, cis-1,2-dichloroethene (cis-DCE), 1,4-dichlorobenzene (DCB), 1,1-DCE, 1,1,1-trichloroethane (TCA), trichloroethene (TCE), and vinyl chloride. While DCE and TCE are probable human carcinogens, vinyl chloride and benzene are known human carcinogens. The benzene, TCE, and vinyl chloride concentrations exceeded their respective Maximum Contaminant Levels (MCLs) at the time of the 1988 ROD. The MCLs for benzene, TCE, and vinyl chloride are 5, 5, and 2 µg/l, respectively. When the 1995 ESD was published, TCE was the only contaminant which remained above its MCL.

## IV. Remedial Actions

The following section details the remedial actions selected for Site soil and groundwater, their implementation, and Site operation and maintenance.

### *Remedy Selection*

The ROD for the Site was signed September 29, 1988 and addressed soil and groundwater as one site-wide operable unit. The groundwater portion of the remedy addressed contamination to the Site boundary. The Site boundary is defined as the extents to which groundwater contamination has come to be located, and extends beyond the fenced MGM Brakes property on to an adjacent vacant lot. The lot referred to is located to the southeast of the Redwood Dental Supply building as shown on Figure 2. The soil remedy was addressed by two separate parcels as follows:

- Parcel 1: PCB-contaminated soil exclusive of that beneath the MGM Brakes casting plant and corresponding concrete slab of the building.
- Parcel 2: Contaminated soil and concrete beneath the casting plant building.

As stated in the ROD, the original selected remedy for soil was removal and off site disposal of all soil exceeding a PCB concentration of 10 mg/kg. This selected remedy was intended to reduce the present and future on site risk to human health and the environment to  $1 \times 10^{-5}$  (1 in 100,000) cancer risk and provide unrestricted future use of the property. Soon after remedial action soil excavation began in 1993 (see Remedy Implementation section for details), it became evident that not all PCB-contaminated soil could be excavated due to the shallow presence and nature of bedrock below portions of the Site. The 1995 ESD altered the soil remedy to allow for some PCB contaminated soils less than 100 mg/kg and at least 15 feet below ground surface to remain on site and to impose land-use restrictions for those contaminated soil areas (Figure 2). A Covenant and Agreement to restrict land use was recorded in Sonoma County on July 12, 1995.

Also as stated in the ROD, further investigation of the VOC contaminated groundwater was to be performed in order to adequately characterize and then restore groundwater up to the Site boundary to appropriate MCLs (EPA 1988, CH2MHILL 2003). After further evaluation of VOC groundwater contamination up to 1995, the ESD selected natural attenuation as the groundwater remedy and defined the leading edge of the groundwater VOC plume as the Point of Compliance (POC). The POC was to be used to ensure that contaminants did not move beyond this point at concentrations greater than MCLs (EPA 1995a, CH2MHILL 2003).



## *Remedy Implementation*

The following section describes the remedial actions implemented in compliance with the ROD, Consent Decree, and ESD pertaining to contaminated soils in Parcels 1 and 2, and in groundwater. The soil remedy was divided into two parts – demolition work and excavation work.

Demolition of the casting plant building and associated structures was necessary to completely access the contaminated concrete slab and soil beneath the slab. Building demolition, excluding the concrete slabs, was completed by May 1992. Building debris was found to be contaminated with hazardous levels of PCBs and was transported off site to Kettleman Hills Class I Landfill for disposal. In September 1992 the concrete building floor slab was covered with a temporary cap.

The excavation work began in June 1993 with the demolition and removal of the concrete floor slab. The excavation work was performed to remove and dispose PCB-contaminated soil from both Parcel 1 and Parcel 2 at the Site. The surface soil excavation area was defined by site investigation and characterization data collected previously. The excavation was implemented by removing and stockpiling onsite surface soil (defined as the uppermost 10 inches) that exceeded 1 mg/kg PCB. The surface soils beyond the bounds of the excavation were then sampled. Any surface soil that exceeded the 1 mg/kg PCB goal was also excavated and stockpiled. The subsurface soil (greater than 10 inches below ground surface) was sampled and where the 10 mg/kg PCB goal was exceeded an additional two feet of soil was removed and the area was resampled. The maximum excavation depth was 29 feet. The stockpiled surface soil was placed in the excavation prior to backfilling the area with clean imported fill material.

Prior to subsurface excavation of soils, it was necessary to dewater the Site in the area of deeper excavation. Twenty-seven well points were installed to extract groundwater and pump to an on site treatment plant which utilized granular activated carbon as the means of treatment. Dewatering occurred from April to October 1993. The local water table was lowered to approximately 30 feet below ground surface while dewatering occurred.

While conducting the excavation, bedrock was encountered at some locations. Due to difficulty in excavating bedrock and soil at the bedrock interface, TBG and IHII proposed to leave this material in place if it: 1) contained less than 100 mg/kg PCBs, and 2) was at least 15 feet below ground surface. The result of this action was that, of the more than 900 12.5- by 12.5-foot grid squares, the remedial goal for PCBs in soil was not met in 11 grid squares. These grid squares are noted in the Covenant and Agreement that documents the restricted use of the property. The approximate locations of the 11 grid squares are shown on Figure 2 of this report.

Excavated soil containing greater than 10 mg/kg PCB and debris were removed daily from the Site and disposed of at facilities appropriate to the material. The extraction wells were abandoned in accordance with applicable regulatory requirements. All excavation field work was completed by June 1994.

In March 1998, the EPA provided a Certificate of Completion for the demolition and excavation work, which documents EPA's concurrence that all portions of the remedial action for soil were completed in accordance with the ROD and the Consent Decree.

According to the ROD the groundwater remedial action included activities to locate the source of VOCs, installation of additional wells to evaluate the extent of VOC contamination and groundwater monitoring. Despite attempts to locate the source of VOC contamination in groundwater, no source was ever identified. The ESD selected natural attenuation as the groundwater remedy and defined a POC to ensure contaminants did not move beyond this point at concentrations above MCLs.

The initial groundwater remedial action was quarterly monitoring for VOCs and annual monitoring for semivolatile organic compounds (SVOCs) and PCBs in 12 monitoring wells. VOCs, PCBs, and SVOCs were analyzed according to EPA Methods 8010 and 8020, EPA Method 8080, and EPA Method 8270, respectively. These requirements were based on the April 1995 VOC monitoring plan. More recent requirements for groundwater monitoring are significantly reduced based on approvals given by EPA in 1998 and 1999 to the remedial contractor:

- Discontinued analysis of SVOCs and PCBs due to sustained measurements less than the respective detection limits,
- Termination of sampling at upgradient well B-74,
- Reduction of sampling frequency from quarterly to semi-annually (April and October),
- Termination of sampling for VOCs in all wells experiencing non-detectable concentrations of VOCs, and
- Abandonment of all wells experiencing non-detectable concentrations of VOCs.

Currently, the groundwater monitoring program includes just two wells, B-50 and B-73, analyzed for VOCs (using EPA Method 8260) on a semi-annual basis.

During the first Five-Year Review a screening-level ecological risk assessment was conducted to evaluate the potential for ecological risk. The risk assessment revealed that there is little to no potential risk to ecological receptors that are currently using the Site or may use the Site in the future (CH2MHILL 2003).

#### *System Operations, Maintenance, and Monitoring (OM&M)*

Current annual operation, maintenance, and monitoring costs are less than \$10,000 per year based on projections from first quarter 2008 costs provided by EKI. Costs include groundwater monitoring well sampling, analysis, data validation, and reporting. The

ESD originally estimated OM&M costs to be \$385,000 over seven years (that is, \$55,000 per year in 1994 dollars without adjustment for inflation or then-present worth discounting). That estimate assumed quarterly monitoring of 11 wells for VOCs, SVOCs, pesticides, and PCBs. The scope for monitoring has been significantly reduced; however, monitoring has been required beyond the original estimated TCE MCL compliance time frame of 2002.

**Table 2 – Available Annual Operation, Maintenance and Monitoring Costs**

OM&M Period	Major Tasks	Total Period Cost
1995 Estimate	Quarterly VOC, SVOC, Pesticide, PCB monitoring at 11 wells	\$55,000/year
1999-2003	Semi-annual VOC monitoring at 11 wells	\$21,000/year
2004	Semi-annual VOCs at 11 wells	\$19,600
2005	Semi-annual VOCs at 11 wells	\$22,800
2006	Semi-annual VOCs at 11 wells	\$23,400
2007	Semi-annual VOCs at 2 wells, abandonment of 9 wells	\$41,300
2008 (through March 31)	Semi-annual VOC monitoring at 2 wells	\$2,500

Since the reduction in wells requiring semi-annual sampling from 11 to two, annual costs to maintain the groundwater monitoring program at its current level are minimal. There are essentially no operations and maintenance costs since there are no active remedial systems on Site. Future operations and maintenance costs would include the abandonment of the two remaining wells. Reductions in monitoring costs have been realized as a result of the continued decline in TCE concentrations due to natural attenuation, with a resulting need for less frequent data collection in fewer wells.

## V. Progress Since the Last Five-Year Review

This report documents the second five-year review period for the Site which encompasses the time period of October 2003 to September 2008. Monitoring data were reviewed up to October 2007. Therefore, progress is measured in comparison to the Site status as of the first Five Year Review signed in September 2003.

### *Protectiveness statement(s) from the last FYR*

The following two paragraphs constituted the protectiveness statements section in its entirety of the first five year review report:

*The soil remedy at MGM Brakes Superfund Site is protective of human health and the environment since the exposure pathway for inhalation and ingestion has been removed due to a combination of excavation, offsite disposal, and placement of clean fill material. A total of eleven grid squares (12.5 feet by 12.5 feet) of contaminated soil that contained less than 100 mg/kg of PCBs and was at least fifteen feet below ground surface was left in place. A voluntary Covenant and Agreement, recorded with Sonoma County, restricts excavation of these portions of the property. The groundwater remedy, natural attenuation of VOCs, is expected to be protective upon completion by achieving levels at or below MCLs, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. The 1995 ESD estimated that groundwater cleanup levels would be reached in seven years. Concentration of TCE in groundwater continue to decline and it is expected that cleanup goals will be reached within the next five years.*

*In order to insure the remedy continues to be protective of human health and the environment and is not compromised in any way, another review will be conducted within 5 years of the completion of this five-year review report, by 2008.*

*Status of recommendations and follow-up actions from last review*

Table 3 lists the issues identified and follow-up actions recommended from the first five-year review report.

**Table 3 – Follow-Up to 2003 FYR Recommendations**

<b>Issue/ Action</b>	<b>Lead Entity</b>	<b>Proposed Schedule</b>	<b>Action Taken (Yes/No)</b>
Continue groundwater monitoring at wells B-50 and B-73, the two wells which still exceeded the TCE MCL of 5 µg/l in April 2003	PRP Remedial Contractor	Semi-annually, each April and October	Yes
Southern fence line was in disrepair due to new building construction on adjacent property. Need to repair fence.	Building Constructor	As soon as practical	Yes
No "Superfund Site" signage exists. Post a sign on the Site entry gate.	PRP Remedial Contractor	As soon as practical	Yes

The following items of progress are noted since October 2003:

- The soil remedy was completed and institutional controls were in place before the first five-year review in 2003. Therefore, no further progress was required regarding the soils remedy.
- Although the degradation rate has been slower than originally anticipated and cleanup goals have not yet been achieved at all monitoring points, groundwater monitoring data has demonstrated progress with respect to natural attenuation mechanisms degrading VOCs.
- The groundwater monitoring program has been streamlined and minor O&M cost savings have been achieved.
- The southern portion of the fence line has been replaced with new fencing and has been reconnected to the existing fence line.
- A sign stating, "Superfund Site, For Information Contact U.S.EPA" has been erected and secured to the front gate of the fenced Site.

## **VI. Five-Year Review Process**

### *Administrative Components*

The MGM Brakes Five-Year Review team was lead by Janet Rosati of USEPA Region IX, the Remedial Project Manager for the Site, and included personnel from the U.S. Army Corps of Engineers, Seattle District. Rebekah Barker and Jefferey Powers, both with USACE, Seattle District, assisted in the review as representatives for the support agency. The review team was formed by November 2007, and the review schedule and its major components were established, including:

- Document Collection and Review;
- Data Assessment/Analysis;
- Institutional Controls Assessment/Analysis;
- Site Inspection;
- Interviews and Community Notification and Involvement
- Five-Year Review Report Development and Review.

The FYR has a statutory completion date of September 2008.

### *Community Notification and Involvement*

EPA published a Fact Sheet in June 2008 notifying the community that EPA had begun the Second Five Year Review of clean-up actions at the Site. The Fact Sheet requested that the community contact EPA if they had any issues or concerns about the cleanup.

A Public Notice with the same information was also published in the Cloverdale Reveille newspaper on June 18, 2008.

### *Document Review*

A review of reports pertinent to this Five-Year Review was conducted by the review team. The types of documents reviewed included decision documents, risk assessment documents, monitoring plans, operation, maintenance and monitoring annual data reports, technical memoranda, the first five-year review report, and other supporting materials. Attachment 1 is a complete list of documents reviewed during this Five-Year Review.

### *Data Review and Evaluation*

Currently, the only media of concern is groundwater, and the only chemical above the federally promulgated MCL since October 2003 has been TCE. Soil is no longer a media of concern due to the soil excavation and removal action in 1993 which was carried out mainly due to unacceptably high levels of PCBs in soil. Subsurface PCB contaminated soil (less than 100 mg/kg) was left in place in parts of eleven 12.5x12.5-ft grid areas where shallow bedrock prevented excavation and removal below 15 feet in depth; however, an Explanation of Significant Differences was documented to address soil left in place, and institutional controls are in place to prevent contact or exposure. PCBs were demonstrated not to have leached to groundwater and are no longer a concern at the Site. All groundwater monitoring data associated with the Site, with an emphasis on data since October 2003, were reviewed and evaluated. The following list is a compilation of all project-related documents reviewed in support of the data assessment:

- MGM Brakes Superfund Site Record of Decision (USEPA Sep 1988),
- Final Technical Memorandum #3 (Evaluation of Remedial Design Alternatives for Groundwater VOCs), MGM Brakes Site (EKI, Inc. Nov 1994),
- Final VOC Groundwater Monitoring Plan, MGM Brakes (EKI, Inc. Apr 1995),
- MGM Brakes Superfund Site Explanation of Significant Differences (USEPA Aug 1995),
- First Five-Year Review Report for MGM Brakes (CH2M Hill/USEPA Sep 2003), and
- Semi-Annual (Groundwater) Monitoring Reports (Oct 2003, Apr 2004, Oct 2004, May 2005, Oct 2005, Apr 2006, Oct 2006, Apr 2007, Oct 2007).

Analytical and hydraulic groundwater data were reviewed from all on site monitoring wells for which data was collected. The specific wells for which data were evaluated are as follows: B22, B23, B24, B30, B31, B33, B43, B45, B45R, B46, B47, B48, B49, B50, B53, B66, B67, B68, B69, B70A, B70B, B70C-1, B70C-2, B71-1, B72-1, B73, B74, B75,

B-76, B77A, B-77B, and B-78. Note that well B-77B is screened in bedrock and data from that well is not included in shallow potentiometric evaluations.

The following VOCs were listed in the Consent Decree (CD) as site-specific contaminants of concern (COCs) for groundwater: benzene, TCE, vinyl chloride, cis-1,2-dichloroethylene, and 1,1-dichloroethylene. In 1995 semi-volatile organic compounds and pesticides were sampled on an annual basis; however, once it was determined these constituents were not present in groundwater they were removed from the analyte list in 1998. The CD listed PCBs as the COCs for soil.

All analytical data were reviewed for this report and only TCE was found to exceed the current cleanup standard for Site groundwater at any point during the time period of interest, and only in well B50. Consequently, only TCE in well B50 has been graphed and presented in Figure 3. Currently two wells remain at the MGM Brakes Site: B73 and B50. Only TCE at B50 remains above the MCL of 5 µg/l. All other COCs, including 1,1-DCE, 1,2-DCE, vinyl chloride, and benzene have never been detected above MCLs.

October 2005 was the last time any COC was detected at well B73 above regulatory limits, when TCE was 7 µg/l. TCE has averaged 3.5 µg/l over last 5 sample periods. Well B73 has experienced a fairly steady decline in TCE since 1991, when TCE at 47 µg/l was detected in groundwater from this well.

Although TCE concentrations have continued to decline at well B50, the rate of decline is now very small. From a high of 37 µg/l in 1987, TCE has dropped to 11 µg/l in October 2007. The last five samples have averaged 8.7 µg/l, whereas the five previous samples averaged 9.8 µg/l, only 1.1 µg/l higher indicating decline is at or is nearly at an asymptotic level. Figure 3 shows that after the soil removal action and associated groundwater dewatering and treatment concluded in October 1993, further natural decline in TCE was slowed, as evidenced by the change in slope of the fitted regression line. Figure 4 shows the seasonality and connection of groundwater levels and TCE contaminant concentration at well B50. In the fall months, TCE concentrations are greatest, presumably because the groundwater volume to TCE mass ratio is at a minimum (i.e., larger recharge of clean water to aquifer in spring months acts to dilute contaminant concentration).

Trend analyses were conducted with data from well B50. Mann-Kendall non-parametric regression analysis was utilized to evaluate trends. All well B50 TCE data were plotted on a semi-logarithmic scale. Figure 3 depicts three different post-excavation regression lines that best fit 1) the entire post-excavation groundwater TCE concentration data set, 2) the post-excavation spring (April) data set, and 3) the post-excavation fall (October) data set. All trends were downward, and were statistically significant at the 90 percent confidence interval (the trend of the pre-soil removal data up to February 1993 was statistically significant at the 95 percent confidence interval). The only data set that indicates concentrations of TCE will be below the MCL of 5 µg/l within the next five years (the timeframe of the Second Five Year Review) is the spring data set, which by itself should not be considered representative of averaged seasonal conditions. For

averaged seasonal conditions, it is best to consider both seasonal high and low concentrations. Therefore the complete data set of spring and fall concentrations should be considered most appropriate. Extrapolation of the complete data set regression line suggests, barring atypically quicker natural attenuation, averaged TCE concentrations will not decline to below 5 µg/l at well B50 until sometime after January 2014 (See Figure 3).

All but two Site wells have been abandoned in accordance with Sonoma County requirements for well decommissioning as of October 2007. This action was allowed by EPA because all but two wells have either had no history or no recent history of contaminants near current regulatory levels. The remaining wells, as mentioned in the analytical section, are B50 and B73. Since potentiometric mapping requires a minimum of three wells, this task is no longer conducted by the remedial contractor.

The last potentiometric map constructed by the remedial contractor was provided in the October 2006 Semi-Annual Monitoring Report, when groundwater elevations were measured at three wells (B45R, B50, and B73). The horizontal groundwater gradient at that time was 0.01 ft/ft to the south. In April 2006, groundwater gradient was evaluated based on elevations from 10 wells. The gradient at that time was 0.02 ft/ft to the southeast. See Table 4 for a summary of individual as well as seasonally averaged hydraulic gradients.

**Table 4 – Historical Hydraulic Gradients**

<b>Date</b>	<b>Direction</b>	<b>Magnitude (ft/ft)</b>
October 2003	Southeast	0.011
April 2004	Southeast	0.013
October 2004	South	0.005
May 2005	Southeast	0.013
October 2005	Southeast	0.01
April 2006	Southeast	0.02
October 2006	South	0.01
<i>Spring</i>	<i>Predominant Southeast</i>	<i>0.015</i>
<i>Fall</i>	<i>Predominant Southeast to South</i>	<i>0.009</i>

The Cloverdale, California vicinity experiences a pronounced Mediterranean-type climate, with dry summers and wet winters. Yearly precipitation averages 44.36 inches; 89% of which falls in the six months of October to March. Precipitation since 2003 has been near average, with the years 2003 and 2004 slightly below average, and the years 2005 and 2006 slightly above average. The first eight months of 2007 experienced below average precipitation. As a consequence, groundwater elevations measured in April and October 2007 were slightly lower than normal. The bulk of precipitation recharge to the shallow groundwater results in much higher groundwater elevations in spring months compared to fall months. Because most of the Site and nearby properties are unpaved, this results in notable precipitation recharge to the shallow



groundwater. See Figure 4 for the hydrograph at well B50 in comparison to total monthly precipitation for Cloverdale. As an example, overall groundwater elevations were approximately six to eight feet lower in October 2006 compared with April of that year. These differences affect the groundwater flow direction and magnitude as discussed previously.

The 1995 ESD estimated that all TCE would be below the MCL of 5 µg/l within seven years of its publication date. In 2003, the First Five Year Review Report revised the estimate, stating that TCE continued to decline but was not below 5 µg/l at all wells, and was expected to be below MCLs within five years (hence by the end of 2008). Extrapolation of the complete data set regression line suggests, barring atypically quicker natural attenuation, averaged TCE concentrations will not decline to below 5 µg/l at well B50 until sometime after January 2014.

The 1995 VOC Groundwater Monitoring Plan states that groundwater monitoring will continue until all COCs are below MCLs for six consecutive quarters (subsequently changed from quarterly to semi-annual sampling), then monitoring will continue once per year for five consecutive years to ensure there is no rebound of COCs to above MCLs. Based on the limited extent and low concentrations of TCE, and evidence that TCE has not rebounded, EPA has indicated that the collection of six and one-half years of data demonstrating TCE to be below the MCL may not be required. If and when this decision is made, it may be necessary to record this change as an amendment to the VOC Groundwater Monitoring Plan and be approved by both the EPA and State.

The observed pattern of seasonal cyclical groundwater elevation changes (i.e., higher elevation in spring and lower elevation in fall) do appear to slightly influence contaminant concentrations. TCE dissolved in groundwater is consistently highest during the fall sampling event, when groundwater elevations are lowest. This relationship can be clearly seen in Figure 4. For this reason, the average TCE concentration is best depicted by taking an average of the spring and fall yearly events. For this reason further reduction in sampling frequency is not recommended.

Groundwater gradient direction has historically been to the southeast, although when lower gradient magnitudes are observed (usually in the fall) the direction sometimes shifts more to the south. Both these directions are generally consistent with the gentle, natural slope of the local topography and surface water drainage off site to the south, southeast, and east. Gradient magnitude is usually greatest in the spring, when water elevations are at their highest levels; however, there does not appear to be a significant change in seasonal gradient magnitude. There is no obvious influence in off-site activity on local groundwater behavior.

The slight changes in groundwater flow direction and magnitude have no adverse implications because TCE, the only COC above its MCL in on-site groundwater, has never been and is not anticipated to be present above MCLs beyond the point of compliance plane located approximately 75 feet downgradient from the two remaining monitoring wells.

### *ARARS Review*

Relevant and appropriate requirements specified in the ROD or ESD pertinent to the remaining subsurface soil below 100 mg/kg for PCBs and TCE in groundwater above 5 µg/l include: Deed Restrictions for PCB Remediated Waste (40 CFR 761.61(a)(8); the Safe Drinking Water Act (40 U.S.C. 300 et seq.), Regional Water Quality Control Board's Water Quality Control Plan, and State of California Domestic Water Quality and Monitoring Regulations regarding the promulgation of MCLs for drinking water and groundwater which has the potential to become drinking water. Attachment 2 provides additional detail regarding ARARS that remain pertinent to this Site, and source citations.

The results of the ARARS review for the MGM Brakes Superfund Site indicate there are no significant changes that have occurred in the regulations since the issuance of the ROD in 1988, as amended by the ESD in 1995 that would affect the protectiveness of the remedies.

### *Site Inspection*

A site visit and inspection was conducted on February 8, 2008 to gather information about the status of the Site. The review team visually inspected and documented the conditions of the Site, the remedy, and the surrounding area for inclusion into the second five-year review. Representatives of the EPA, USACE, California Regional Water Quality Control Board, North Coast Region, and Erler & Kalinowski, Inc. (the remedial consultant for the PRPs) were present for the site inspection. For additional details regarding the site inspection and findings, including site photographs of select features and a roster of attendees, see the Site Inspection Trip Report (Attachment 3) and Site Inspection Checklist (Attachment 4).

Observations during the site inspection indicated access to the Site is restricted by an aluminum chain-link fence topped with barbed wire around the entire MGM Brakes property. The only current features within the fenced area are an asphalt parking lot immediately beyond the front gate, and an open, grassy field. The parking lot was installed at the completion of the building demolition and soil excavation work. The only intended access points are the front gate and a side gate at the northwestern fence line along Donovan Road. The front gate was closed and did have a chain and padlock; however the chain was not wrapped around both sides of the gate and therefore the gate was unsecured at the time of the visit. The side gate was chained and locked to prevent entry. The side gate apparently is unused based on the overgrowth of weeds and shrubs on both sides of this gate. Two locations along the fence line abutting Donovan Road contained holes large enough for human entry and egress. Minor amounts of rubbish such as soda bottles, snack wrappers, pieces of tarp, polystyrene cooler, and tent pieces were observed inside the property fence line. Signage was in

place near the front gate ("Superfund Site"), along South Cloverdale Boulevard ("For Sale"), and on the side gate ("Danger, Keep Gate Closed"). Trespassing and vandalism reportedly are not recurring issues of concern for the Site.

Because COCs other than TCE have not been detected in groundwater above clean up standards during this review period, and because TCE was detected in only two wells, all other wells have been decommissioned. One well abandonment location within the parking lot of a newly constructed office building was evident since an asphalt patch was made. Attempts to find additional abandoned well locations on the dental building property were not successful. The two remaining wells, B50 and B73 are not located within the fenced MGM Brakes property; instead, they are located approximately 50 to 75 feet to the east on a small property adjacent to the MGM Brakes property not controlled by the PRPs (Figure 2). The wells are located on an unused lot that is only partially fenced; hence access is unrestricted. Well B50 is completed above the land surface while B73 is completed in a vault that is flush with the land surface.

Running along the eastern and southeastern fence lines on site are two concrete-lined drainage ditches. Next to these ditches exist abundant vegetative growth (blackberries, moss, algae, weeds, leaves) along with occasional small amounts of rubbish. Some grasses and moss were observed growing in accumulated sediment within the ditches themselves. Small cracks exist in the concrete which likely promotes some local recharge of groundwater that was originally not intended. These ditches were installed after the soil excavation activities were completed to prevent soil erosion by rainfall runoff. Therefore, the ditches are functioning as designed.

### *Interviews*

No formal interviews were conducted for this review. However, the California RWCQB project lead Ms. Janice Goebel attended the Site inspection, and provided valuable background information and answered questions pertinent to the Inspection. The answers she provided are reflected in Attachment 4, the Site Inspection Checklist.

## **VII. Technical Assessment**

*Question A: Is the remedy functioning as intended by the decision documents?*

Answer: Yes, the remedy is functioning as intended by the ROD as amended by the ESD, and as further explained in the following subparagraphs.

### A.1 Remedial Action Performance and Monitoring Results:

Both the soil and groundwater remedial actions are performing as intended by the ROD and as amended by the ESD. An affiliated company of TBG is the owner of the former

MGM Brakes property which constitutes a portion of the MGM Brakes Superfund Site. They have complied with the Covenant and Agreement for subsurface soils in excess of 15 feet in the 11 restricted areas by not excavating any Site soils. Groundwater monitoring has indicated a gradual but notable decline in dissolved TCE (a chlorinated VOC) concentrations since the first five-year review. Since monitored natural attenuation was the remedy selected in the ESD for VOCs and PCBs in groundwater and since PCBs and all other chemical classes (i.e., SVOCs, pesticides) have since been eliminated as COCs in groundwater, the remedy with respect to groundwater is functioning as intended.

#### A.2 System Operations and Maintenance:

There is no operating remedial system in place for either soil or groundwater remedies, therefore system operation and maintenance in the strictest sense is not applicable. There are no known Site documents addressing routine inspection and maintenance of Site features. Maintenance associated with existing monitoring wells, property fence line, and gates should be considered. The two remaining monitoring wells should be inspected and maintained since they are the key indicators of when the groundwater cleanup goals have been achieved.

No maintenance of ICs is required because the covenant and agreement "run with the land", so that any purchaser or occupant of the property would be legally bound to comply with the restrictions.

#### A.3 Costs of System Operations, Maintenance, and Monitoring:

The yearly annual operations, maintenance, and monitoring costs for the MGM Brakes Site as presented in Section IV is predominantly associated with groundwater monitoring and reflects the reduction in scope of the monitored natural attenuation remedy, including periodic reduction in sample quantities, sample frequency, and sampled analytes. OM&M costs are small, and there are no indications of potential future problems based on cost data.

#### A.4 Opportunities for Optimization:

There are no opportunities to optimize the soils remedy because no operating remedial system was prescribed. Opportunities to optimize the groundwater remedy are minimal since only one well exists with any contaminant level above regulatory limits, and the level only slightly exceeds the MCL for TCE (11 µg/l in well B50 on October 2007 compared to the MCL of 5 µg/l). The current semi-annual sample schedule should not be reduced based on the data evaluation presented in Section VI. One possible optimization scenario might be to amend the groundwater in the vicinity of well B50 to accelerate the biological and/or physical degradation of TCE. However, a cost-to-benefit analysis likely would show any such optimization to be non-cost effective considering the current low cost for the groundwater monitoring program.

#### A.5 Early Indicators of Potential Remedy Problems:

There are no early indicators of potential remedy problems.

#### A.6 Implementation of Institutional Controls and Other Measures:

Institutional controls (ICs) are defined as non-engineered instruments that minimize potential for human exposure, limit land use, and/or protect the integrity of the remedy. The lone IC for the MGM Brakes Site is a Covenant and Agreement to Restrict Use of Certain Property (C&A) executed by the California Department of Toxic Substances (DTSC) and the owner of the Site in July 1995. This IC pertains to the prohibition of disturbing left-in-place subsurface PCB contaminated soils in the 11 restricted grid squares as so designated in the C&A. The C&A was examined during the site inspection at the Sonoma County Recorder's Office, and was found to be in place and appears to be legally enforceable. The owner has not disturbed any soil within the restricted area since the soil remedy was completed. See Attachment 5 for an evaluation of this Site IC.

Groundwater beneath the Site has not been designated as a drinking water source by the NCRWQCB. However, Sonoma County sends the NCRWQCB all groundwater well permit applications. The NCRWQCB staff review the permit application to determine whether the proposed well will be located on or near a contaminated area. The permit application is rejected if this is the case.

*Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?*

Answer: Yes, the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy are still valid, as further described below.

#### B.1 Changes in Exposure Pathways:

There are no known changes in pathways of exposure to either the subsurface soils containing PCB concentrations below 100 mg/kg or to groundwater with TCE above 5 µg/l since the first Five-Year Review. There have been no changes to either existing or expected land use on or near the Site since the first five-year review, and no buildings, other structures, or water supply wells have been constructed over the footprints of the area of restricted soils or the TCE plume. There have been no newly identified contaminants or contaminant sources. There have been no unanticipated toxic byproducts of the remedy not previously addressed. Institutional controls were evaluated and remain in place to retain the current land use and to prevent exposure.

## B.2 Changes in Toxicity and Other Contaminant Characteristics:

Although in 2001 the USEPA published an external review draft health-based risk assessment for TCE using updated, more stringent toxicity values, there are no known final changes to toxicity factors for TCE since the first Five-Year Review. Additionally, these changes would not affect the protectiveness of the groundwater remedy, since the NCRWQCB would disapprove permits for water supply wells to be installed on or near the site.

In 1996-97 EPA reduced the PCB toxicity factors due to further research in the field. For human sediment/soil ingestion, the current high-risk upper bound slope factor is 2.0 (mg/kg)/day and the central-estimate slope factor is 1.0 (mg/kg)/day. For low risk and persistence, the current upper bound and central-estimate slope factors are 0.4 and 0.3 (mg/kg)/day (USEPA IRIS Database, 2007). This revision implies the subsurface PCBs left on site pose less of a risk than previously estimated. Therefore, the revisions to PCB toxicity do not affect the protectiveness of the soils remedy.

## B.3 Changes in Risk Assessment Methods:

There have been no revisions to the standardized risk assessment methodology since the first Five-Year Review that could affect the protectiveness of the remedy. Risk associated with vapor intrusion is not a concern for the Site due to 1) the absence of a source area for volatile constituents, 2) the low concentrations of volatiles (less than or equal to 11 µg/l) in groundwater, and 3) no VOCs are currently detected near existing structures.

## B.4 Changes in standards and TBCs:

There have been no changes in regulatory standards with respect to TCE since the first Five-Year Review.

## B.5 Expected Progress Towards Meeting RAOs:

This review indicates that the combined remedial action objectives for the above ground appurtenances, soil and groundwater remedies are still valid: 1) demolition and removal of site structures (completed); 2) removal of soil, concrete, and debris containing PCBs above established clean up levels above 15 feet (completed); 3) implement controls to prevent exposure to PCB-containing soil above risk-based concentrations below 15 feet (completed); and 4) characterize VOC contamination in groundwater and monitor until COCs attenuate to below established clean up levels (in-progress). There have been no changes in Site conditions or toxicity criteria to suggest that either in-progress response actions are no longer required or that additional actions need to be taken.

*Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*

Answer: No other information has come to light that could call into question the protectiveness of the remedy.

#### *Technical Assessment Summary*

According to the data reviewed and information obtained from the site inspection, the remedy is functioning as intended by the ROD as amended by the ESD. There have been no changes in the ARARs, standards or TBCs that should affect the protectiveness of the remedy. The remedy is still protective of human health and the environment. There is no other information that calls into question the protectiveness of the remedy.

### **VIII. Issues**

The breaches in the MGM Brakes property fencing have been repaired since the time of the site inspection. There are no known Site issues that, either currently or in the future, prevent the remedial actions from being protective.

### **IX. Recommendations and Follow-up Actions**

There are no recommendations other than to continue groundwater monitoring and Site maintenance.

### **X. Protectiveness Statement(s)**

The remedy at the MGM Brakes Site is protective of human health and environment because all exposure pathways have been eliminated or controlled.

### **XI. Next Review**

The next five-year review for the MGM Brakes Superfund Site is required by September 2013, five years from the date of this review.

## **Figures**

Figure 1 – Site Location Map

Figure 2 – Site Plan

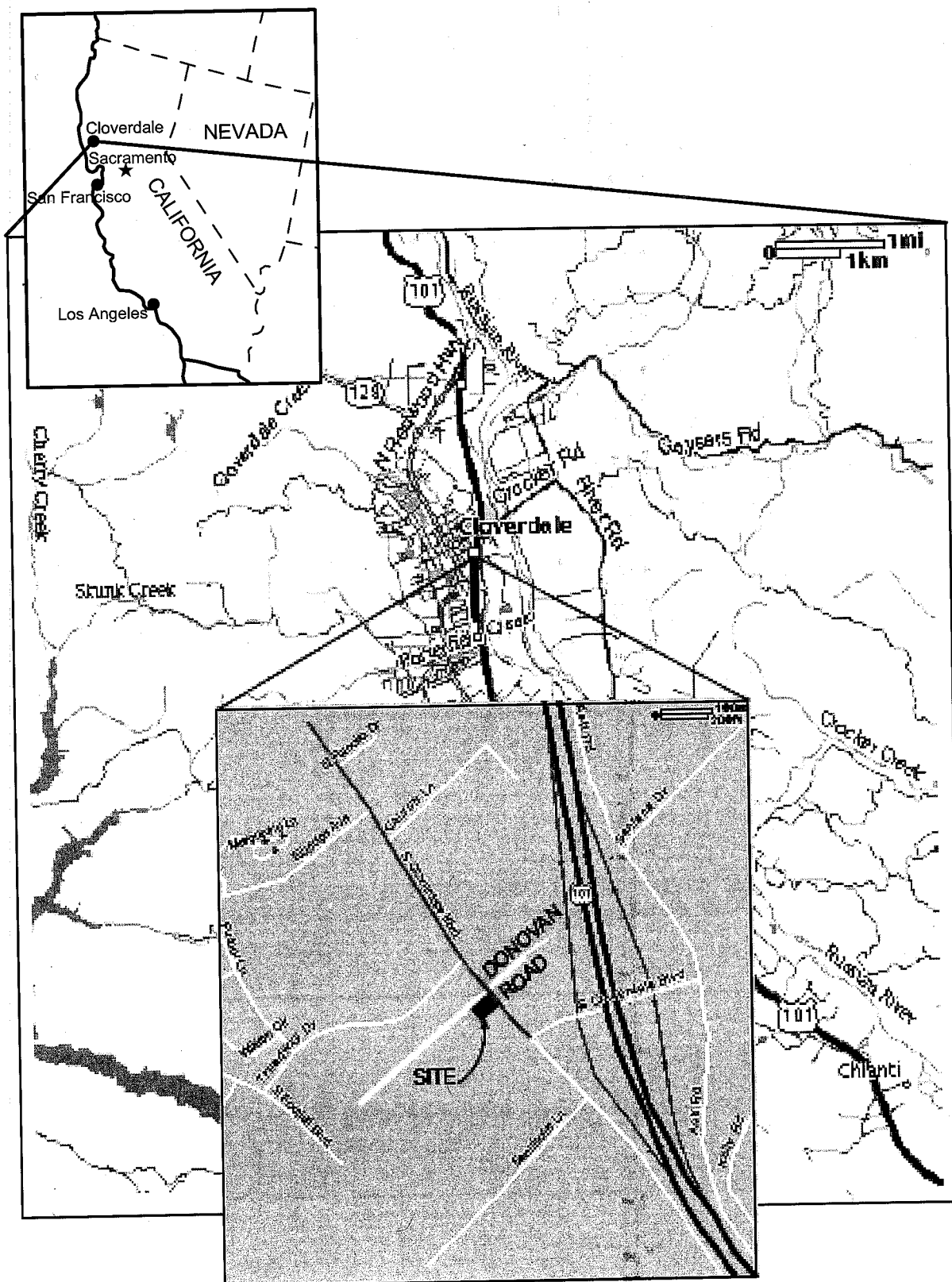
Figure 3 – Historical TCE Concentrations at Well B50 and Projected  
Decreasing Trend

Figure 4 – Well B50 Water Level Versus TCE Concentration



**Figure 1**

**Site Location Map**



Drawing based on Figure 1, First Five-Year Review (CH2MHILL 2003)

U.S. ARMY CORPS OF ENGINEERS  
SEATTLE DISTRICT

### MGM Brakes Superfund Site Location Map

Second Five-Year Review Report

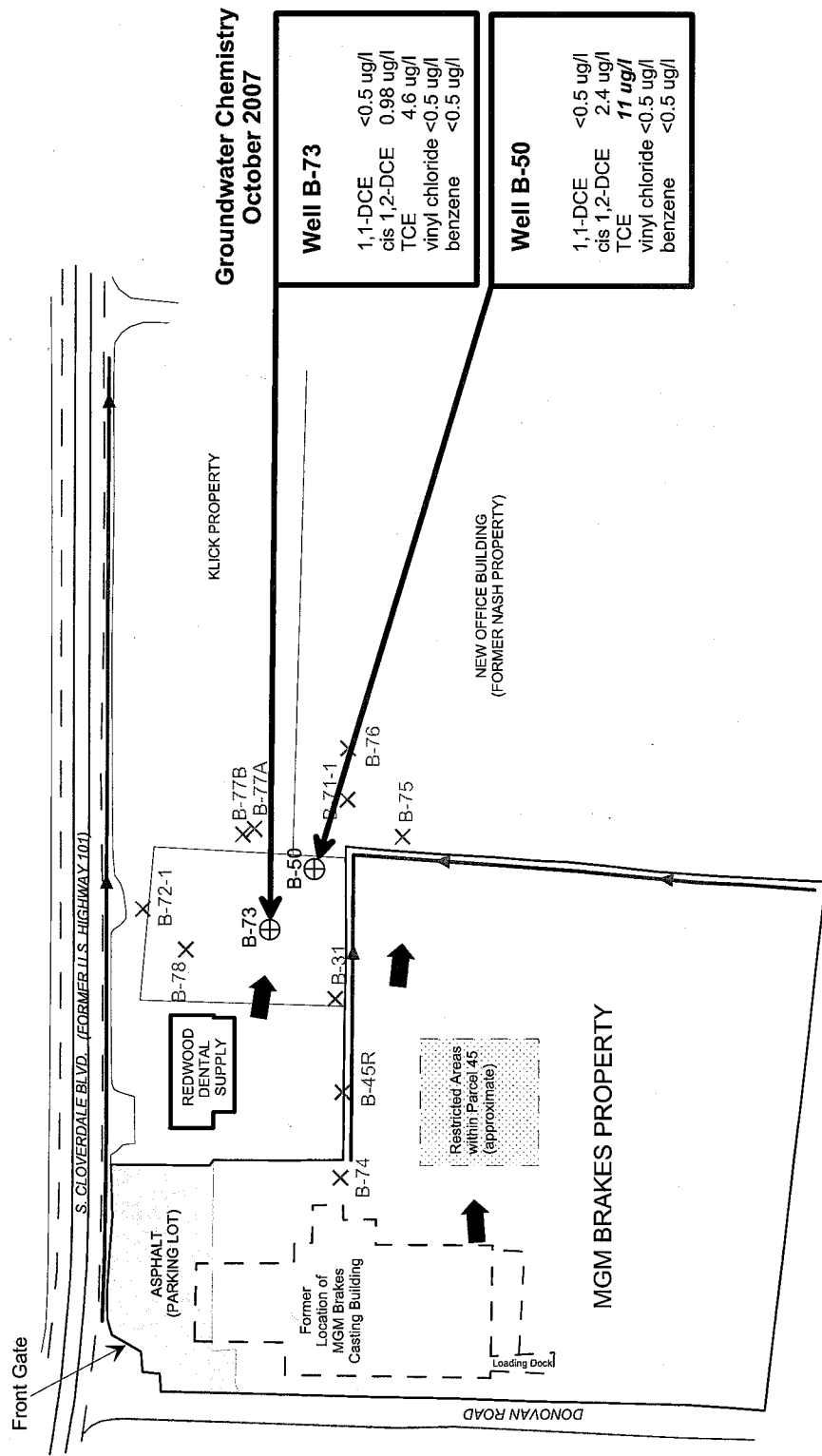
Cloverdale

**Figure 1**

California

## **Figure 2**

**Site Detail**



- LEGEND:**
- ⊕ Existing Monitoring Well
  - × Abandoned Monitoring Well
  - ➡ Averaged Predominant Groundwater Flow Direction
  - ➡ Drainage Ditch with Flow Direction



U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT	
<b>MGM Brakes Site Detail</b>	
Second Five-Year Review Report	<b>Figure 2</b>
Cloverdale	California

Drawing based on Figure 6, First Five-Year Review (CH2MHILL 2003)

### **Figure 3**

**Historical TCE Concentrations at Well B50 and Projected  
Decreasing Trend**

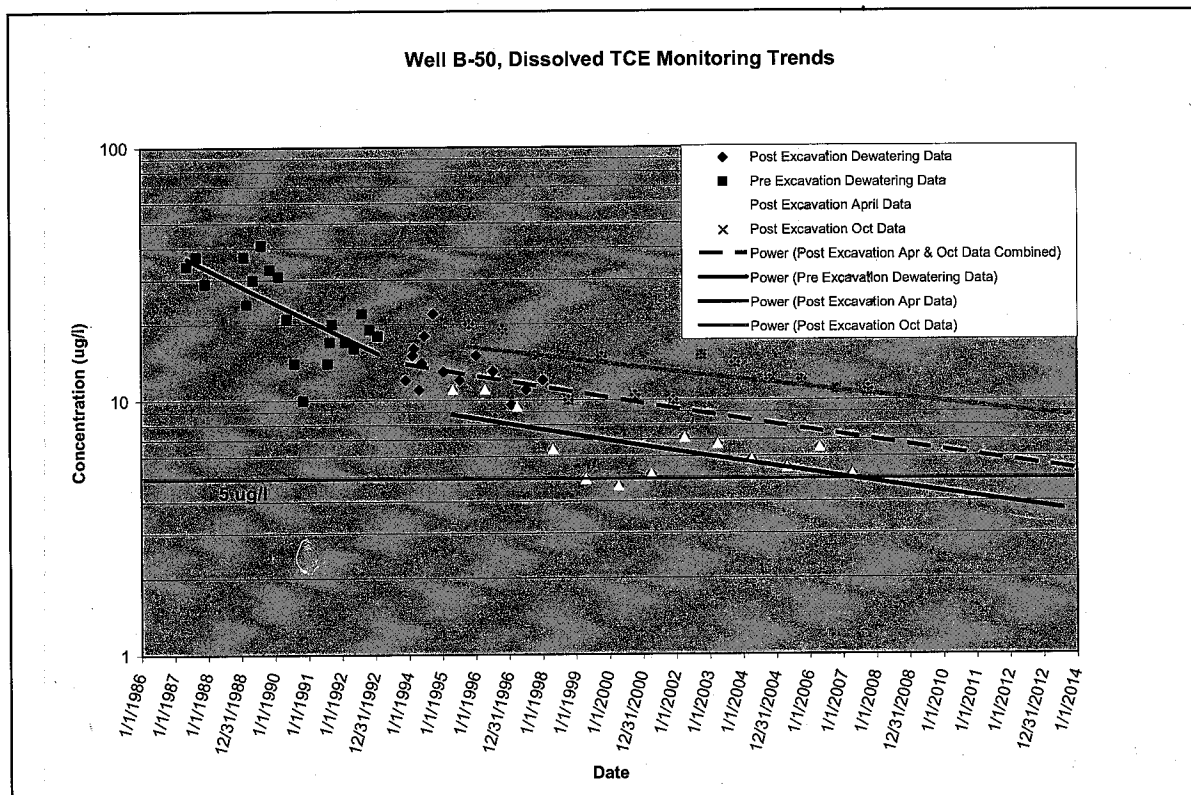


Figure 3. Historical TCE Concentrations at Well B50 and Projected Decreasing Trend

## **Figure 4**

**Well B50 Water Level versus TCE Concentration**

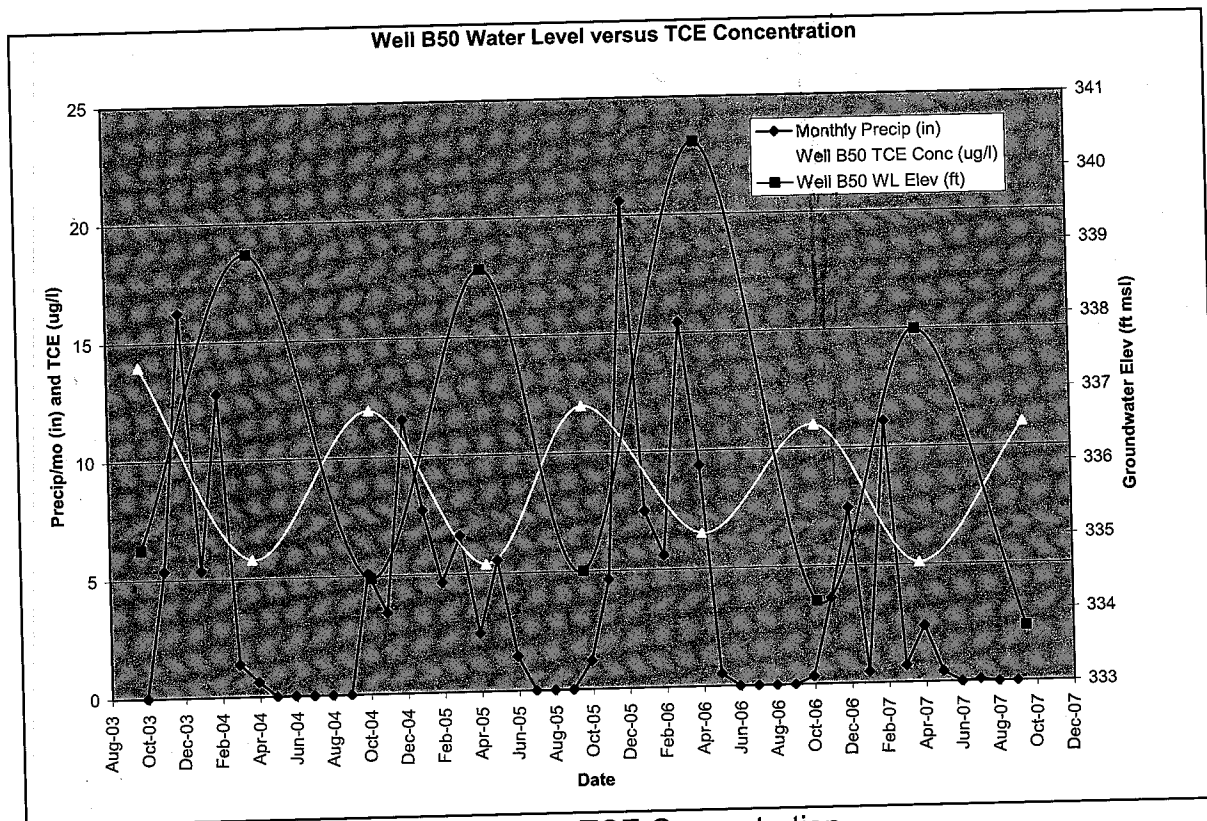


Figure 4. Well B50 Water Level Versus TCE Concentration



## **Attachment 1**

### ***List of Documents Reviewed***

## LIST OF DOCUMENTS REVIEWED

CH2M Hill Sep 2003. First Five-Year Review Report for MGM Brakes Superfund Site, Cloverdale, California. Prepared for USEPA.

EKI Nov 1993. MGM Brakes Superfund Site, Health Risk Assessment for Soils with PCB Concentrations Greater than Remedial Action Goals and Deeper than 15 Feet.

EKI Apr 1994. Health Risk Assessment for PCB Residual in Shallow Soils Remaining After Remedial Action, MGM Brakes Superfund Site, Consent Decree No. C-89-4047.

EKI Nov 1994. Final Technical Memorandum No. 3, Evaluation of Remedial Design Alternatives for Groundwater VOCs, MGM Brakes Superfund Site.

EKI Apr 1995. Final VOC Groundwater Monitoring Plan, MGM Brakes Superfund Site, Cloverdale, California.

EKI Nov 2003. Semi-Annual Monitoring Report – October 2003, MGM Brakes Superfund Site, Cloverdale, California.

EKI May 2004. Semi-Annual Monitoring Report – April 2004, MGM Brakes Superfund Site, Cloverdale, California.

EKI Dec 2004. Semi-Annual Monitoring Report – October 2004, MGM Brakes Superfund Site, Cloverdale, California.

EKI May 2005. Semi-Annual Monitoring Report – May 2005, MGM Brakes Superfund Site, Cloverdale, California.

EKI Nov 2005. Semi-Annual Monitoring Report – October 2005, MGM Brakes Superfund Site, Cloverdale, California.

EKI May 2006. Semi-Annual Monitoring Report – April 2006, MGM Brakes Superfund Site, Cloverdale, California.

EKI Nov 2006. Semi-Annual Monitoring Report – October 2006, MGM Brakes Superfund Site, Cloverdale, California.

EKI May 2007. Semi-Annual Monitoring Report – April 2007, MGM Brakes Superfund Site, Cloverdale, California.

EKI Nov 2007. Semi-Annual Monitoring Report – October 2007, MGM Brakes Superfund Site, Cloverdale, California.

## LIST OF DOCUMENTS REVIEWED, Continued

McCutchen, et al. Jul 1995. Covenant and Agreement to Restrict Use of Certain Property.

North Coast CRWQCB May 2007. Approval Letter, RE: Concurrence with Abandonment of Select Groundwater Monitoring Wells, MGM Brakes Superfund Site, Cloverdale, California.

Sonoma County Recorder's Office, Santa Rose, CA. Deed of Property Ownership, Cloverdale Property LLC, 2000, Sonoma County, CA #2000-037-674.

USEPA Sep 1988. MGM Brakes Superfund Site Record of Decision.

USEPA Aug 1995. MGM Brakes Superfund Site Explanation of Significant Differences.

USEPA Mar 1998. Certificate of Completion for the Demolition and Excavation Work, MGM Brakes Superfund Site, Cloverdale, California.

USEPA Nov 2003. Approval Letter with Restrictions, RE: Request for Reduction in Groundwater Sampling and Analysis, MGM Brakes Superfund Site.

USEPA Jan 2004. First Five-Year Review Fact Sheet, MGM Brakes Superfund Site.

USEPA Sep 2006. Approval Letter with Restrictions, RE: Request to Abandon Selected Groundwater Monitoring Wells, MGM Brakes Superfund Site.

## **Attachment 2**

### *ARARS Summary*

# ARARS Summary Table

The following ARARS remain applicable or relevant and appropriate to the MGM Brakes Superfund Site

Source	Citation	Applicable or Relevant and Appropriate	Description	Significant Changes in Regulation
<b>Chemical-specific</b>				
Federal Safe Drinking Water Act (40 U.S.C. 300 et seq.)	National Primary Drinking Water Standards (40 CFR Part 141, Subpart G)	Relevant and appropriate	National primary drinking water standards are health-based standards for public water systems. The standards apply only to public water supply systems, however, under SARA, MCLs may be considered relevant and appropriate for contaminated groundwater that may result in a potential exposure via drinking water.	No changes that would significantly impact the current remedial actions or cleanup standards.
Regional Water Quality Control Board's Water Quality Control Plan (Basin Plan)	Water Quality Control Plan for the North Coast Region (Table 3-2)	Relevant and appropriate	The Basin Plan establishes water quality objectives designed to protect beneficial uses of surface and groundwater within the North Coast Region. The standards apply only to public water supply systems, however, under SARA, MCLs may be considered relevant and appropriate for contaminated groundwater that may result in a potential exposure via drinking water.	No changes that would significantly impact the current remedial actions or cleanup standards.
State of California, Domestic Water Quality and Monitoring Regulations	CCR, Title 22, Division 4, Chapter 15, Article 4, Section 64444	Relevant and appropriate	The domestic water quality regulations for the State of California established MCLs for primary drinking water chemicals. The standards apply only to public water supply systems, however, under SARA, MCLs may be considered relevant and appropriate for contaminated groundwater that may result in a potential exposure via drinking water.	No changes that would significantly impact the current remedial actions or cleanup standards.
Porter-Cologne Water Quality Control Act (California Water	Title 27, CCR, Section 20410, Title 23, CCR, Section	Applicable	Applies to groundwater remediation and monitoring of sites. Groundwater will be remediated and monitored according to Title	No changes that would significantly impact the current

# ARARS Summary Table

The following ARARS remain applicable or relevant and appropriate to the MGM Brakes Superfund Site

Source	Citation	Applicable or Relevant and Appropriate	Description	Significant Changes in Regulation
Code Sections 13140-13147, 13172, 13160, 13267, 13304	2550.6		27/Title 23 regulations	remedial actions or cleanup standards.
Deed restrictions for left-in-place PCBs	40 CFR 761.61(a)(8)	Applicable	<p>Within 60 days of completion of PCB cleanup activities involving the implementation of a cap or use of a low-occupancy area, the owner of the site must record a notation on the deed to the property, or on some other instrument that is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property:</p> <ul style="list-style-type: none"> <li>• That the land has been used for PCB remediation waste disposal and is restricted to use as a low-occupancy area as defined in Part 761.3.</li> <li>• Of the existence of the fence or cap and the requirements to maintain the fence or cap.</li> <li>• Applicable cleanup levels left at the site, inside the fence, or under the cap.</li> </ul>	No changes that would significantly impact the current remedial actions or cleanup standards.
<i>Location-specific</i>				
None were identified for the MGM Brakes Site in the 1988 ROD or 1995 ESD.				
<i>Action-specific</i>				
Groundwater monitoring standards	27 CCR 20415 23 CCR 2550.7	Applicable	Requires general soil, surface water, and groundwater monitoring	No changes that would significantly impact the current remedial actions or cleanup standards.
EPA's Guidance on		Applicable	Remedial action shall be in accordance with,	No changes that

# ARARS Summary Table

The following ARARS remain applicable or relevant and appropriate to the MGM Brakes Superfund Site

Source	Citation	Applicable or Relevant and Appropriate	Description	Significant Changes in Regulation
Remedial Actions for Contaminated Groundwater at Superfund Sites (December 1988)		Appropriate and relevant	but not limited to, the NCP and EPA's Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (1988) or any superseding final version of such guidance.	would significantly impact the current remedial actions or cleanup standards.
OSHA Guidance for Hazardous Waste Site Activities	(October 1985 DDH 5 NIOSH) Publication No. 85-115	Relevant and appropriate	The Health and Safety Plan of this Consent Decree shall satisfy the requirements of the OSHA standards for Hazardous Waste Site Activities. The H&S Plan shall address the potential exposure of workers at the site and the public to potential releases at and from the site during remedial work.	No changes that would significantly impact the current remedial actions or cleanup standards.
City of Sonoma Board of Supervisors	Ordinance 5175	TBC	This ordinance requires that all developed parcels in zones of groundwater contamination using groundwater wells for potable water purposes be connected to publicly-provided water supply. Also prohibits new wells in designated zones of groundwater contamination.	No changes that would significantly impact the current remedial actions or cleanup standards.

## **Attachment 3**

*Site Visit/Trip Report, with Photographs*



## Site Inspection Team Roster

MGM Brakes Superfund Site  
Second Five-Year Review  
Site Inspection – February 8, 2008

Name	Title	Affiliation	Phone No.
Janet Rosati	Remedial Project Manager	USEPA, Region 9	(415) 972-3165
Janice Goebel	Sanitary Engineering Associate	California Regional Water Quality Control Board, North Coast Region	(707) 576-2676
Karen Gruebel, Ph.D.	Consulting Engineer/Scientist	Erler & Kalinowski, Inc.	(650) 292-9100
Rebekah Barker	Environmental Engineering & Technology Section	US Army Corps of Engineers, Seattle District	(206) 764-6837
Jefferey Powers	Geology & Instrumentation Section	US Army Corps of Engineers, Seattle District	(206) 764-6586

## TRIP REPORT

MGM BRAKES SUPERFUND SITE, CLOVERDALE, CA  
(EPA ID: CAD000074120)

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### 1. INTRODUCTION:

- a. Date of Visit: 8 February 2008
- b. Location: Cloverdale, Sonoma County, California
- c. Purpose: A site visit was conducted to provide information about the site's status and to visually inspect and document the conditions of the remedy, the site, and the surrounding area for inclusion into the second Five-Year Review Report.

- d. Travelers:

Rebekah Barker	USACE Seattle District	(206) 764-6837
Jefferey Powers	USACE Seattle District	(206) 764-6586

- e. Contacts:

Janet Rosati	USEPA Region 9 RPM	(415) 972-3165
Janice Goebel	CA Regional Water Quality Control Board	(707) 576-2676
Karen Gruebel	Erler & Kalinowski, Inc.	(650) 292-9100

### 2. SUMMARY:

Rebekah Barker and Jefferey Powers arrived in Oakland, California on the afternoon of 7 February 2008 and drove to Cloverdale, approximately 100 miles north, in preparation for the site visit and site inspection. On 8 February 2008 Ms. Barker and Mr. Powers (USACE team) arrived at the MGM Brakes Site front gate at approximately 0940 hrs at the intersection of South Cloverdale Boulevard and Donovan Road. The weather was sunny and winds calm, with a temperature of 50°F.

The USACE team met with others in attendance at the site visit which began at approximately 1000 hrs. Those participants in attendance are listed in paragraphs 1.d and 1.e above. The front gate was closed, but unlocked (Photograph 1, attached). It is estimated that the grassy field had been mowed within the past six to eight weeks (Photograph 2). Ms. Gruebel was representing Erler & Kalinowski, Inc., the consulting firm which performs groundwater monitoring for MGM Brakes. After introductions were made, Ms. Gruebel provided a brief Site history with input by others and Site walk with narrative (See Section 3, DISCUSSION, for details). The site visit concluded at approximately 1120 hrs.

The USACE team returned to Seattle via Oakland on the afternoon/evening of 8 February 2008. On the drive back to Oakland, the USACE team stopped in Santa Rosa, CA at the Sonoma County Assessors Office to research the land use control placed on the property as stated in the Explanation of Significant Differences. See the Institutional Controls Memorandum for details on the deed and pertinent restrictions.

### 3. DISCUSSION:

The trip was made to complete the formal site inspection and associated Site Inspection Checklist, an important component of the Five Year Review. Furthermore, the site visit was helpful in providing the USACE technical team the opportunity to become more familiar with the Site and its relationship to the surrounding properties.

MGM Brakes is a USEPA-led CERCLA site in which a five-year review is being conducted, with technical assistance provided by the Seattle District USACE. The physical remedies that have occurred on site dating back to 1992 include building demolition, soil excavation and off site disposal (including excavation dewatering and treatment), periodic groundwater monitoring, surface water sampling, and access restrictions including fencing, locked gate, and signage. There is no on-site document repository because no permanent structures currently exist on site, and other than periodic sampling of the remaining monitoring wells and Site mowing, no Site activities occur on a routine basis. Documents are maintained in the offices of USEPA Region 9, Erler & Kalinowski, Inc. (EKI, the consulting firm hired by the PRP), and the Cloverdale Regional Library (the local repository for MGM Brakes Superfund Site Administrative Record file, though not verified).

Access to the Site is restricted by an aluminum chain-link fence topped with barbed wire around the entire MGM Brakes property (Photograph 3). Because the remedy included building demolition and subsequent excavation and backfill of soils, the only current features within the fenced area are an asphalt parking lot immediately beyond the front gate, and an open, grassy field. The only intended access points are the front gate and a side gate at the northern fence line along Donovan Road. The front gate was closed and did have a chain and padlock; however the chain was not wrapped around both sides of the gate and therefore the gate was unsecured. The side gate was chained and locked to prevent entry. The side gate apparently is unused based on the overgrowth of weeds and shrubs on both sides of this gate (Photograph 4). Two locations along the fence line abutting Donovan Road contained holes large enough for human entry and egress (Photographs 5 and 6). Minor amounts of rubbish such as soda bottles, snack wrappers, pieces of tarp, polystyrene cooler, and tent pieces were observed inside the property fence line. Signage was in place near the front gate ("Superfund Site," Photograph 7), along South Cloverdale Boulevard ("For Sale," Photograph 8), and on the side gate ("Danger, Keep Gate Closed," Photograph 4). Trespassing and vandalism reportedly are not recurring issues of concern for the Site.

Because chemicals of concern (COC) other than TCE have not been detected in groundwater above clean up standards during this review period (October 2003 to present), and because TCE was detected in only two wells, all other wells have been decommissioned. One well abandonment location within the parking lot of a newly constructed office building was evident since an asphalt patch was made. This can be seen in the left-foreground of Photograph 3. Attempts to find additional abandoned well locations on the dental building property were not successful. The two wells remaining, B50 and B73, are not located within the fenced property; instead, they are located approximately 50 to 75 feet to the southeast on a small piece of property adjacent to the MGM Brakes Site. The wells are located on an unused lot that is only partially fenced;

hence access is unrestricted. Well B50 is completed above the land surface (Photograph 9) while B73 is completed in a vault that is flush with the land surface (Photograph 10).

The lone deficiency noted for well B50 was the inability of its outer protective casing to prevent rainwater from collecting around the opening to the inner casing. When the sampling technician unlocks and uncaps the inner well casing for sampling, rainwater will likely enter the well casing and mix with the formation water to be purged and sampled. The expandable cap on B73, although locked, was able to be removed during the site inspection by a slight pull of the cap. This may be rectified in the future by simply expanding the cap to fit tighter in the well casing prior to securing the padlock to the cap.

Running along the eastern and southeastern fence lines on site are two concrete-lined drainage ditches. Within and adjacent to these ditches existed abundant vegetative growth (blackberries, moss, algae, weeds, leaves) along with occasional small amounts of rubbish (Photograph 11). Cracks exist in the concrete which likely promotes some local Site recharge of groundwater that was originally not intended. These ditches were constructed after the soil removal action occurred to prevent soil erosion. They appear to be working as intended.

There is currently no waste stream generated from the Site other than drums of purge water from the semi-annual groundwater sampling. Through arrangements with EKI, the purge water is picked up and disposed of by General Environmental Management Incorporated from Benicia, California. There were no drums present during the site inspection. The concrete-lined drainage ditches running along the eastern and southeastern fence lines direct clean, rainwater away from the Site.

On 12 February 2008, four days after the site visit, EPA was notified by the remedial contractor (Karen Gruebel, lead consulting engineer/scientist for EKI) that a new chain and lock were in place securing the front gate of the fenced portion of the Site. Furthermore, EKI was working to have the two aforementioned holes fixed in the perimeter fence and to install a new locking cap on the monitoring well (presumably well B73).

#### 4. RECOMMENDATIONS:

The USACE Seattle District will incorporate the information obtained from the site visit into the second Five-Year Review Report, and will also assist the USEPA Region 9 in documentation of the site visit to be incorporated into the Site Inspection Checklist.

Jefferey Powers, L.G.  
Hydrogeologist  
CENWS-EC-TB-GE

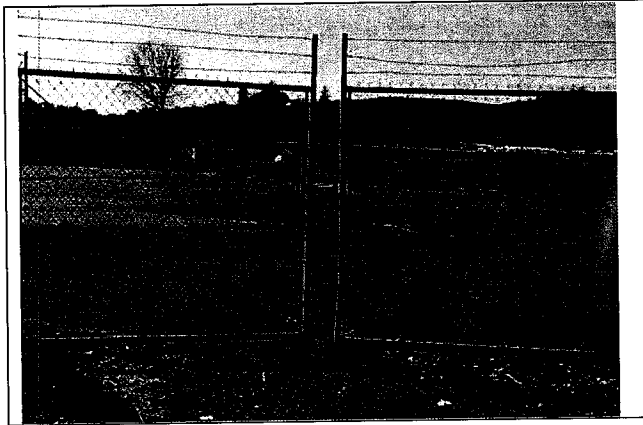


Photo 1. Front gate; closed but unlocked.



Photo 2. Fenced site looking south.

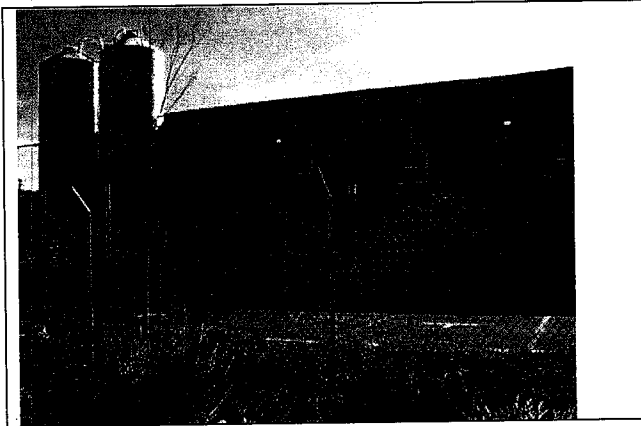


Photo 3. Site chain link fence.

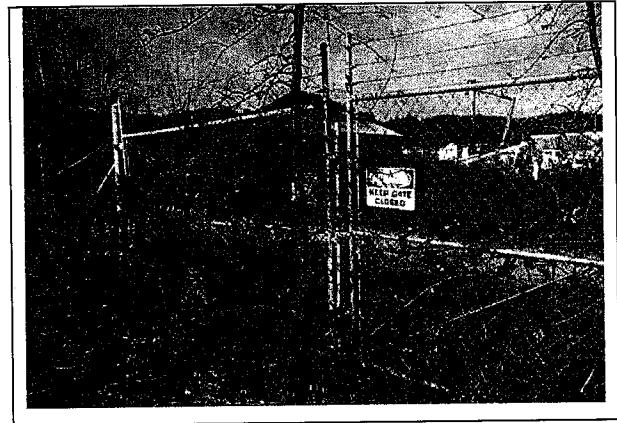


Photo 4. Unused side gate locked, with signage.

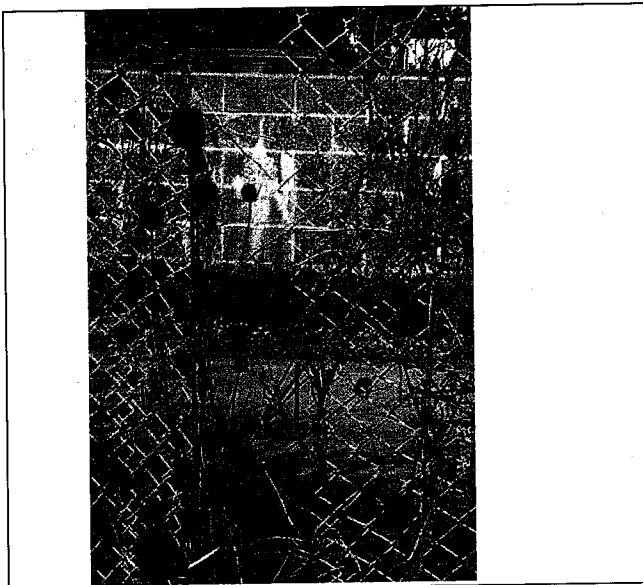


Photo 5. Hole #1 in fence beside Donovan Rd.

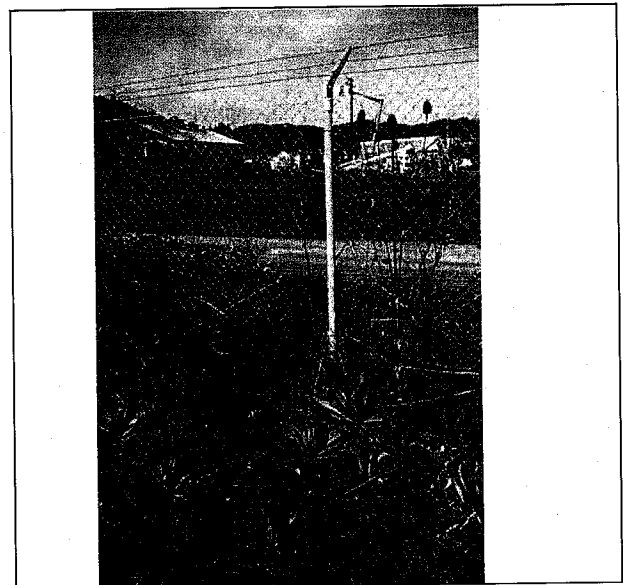


Photo 6. Hole #2 in fence beside Donovan Rd.

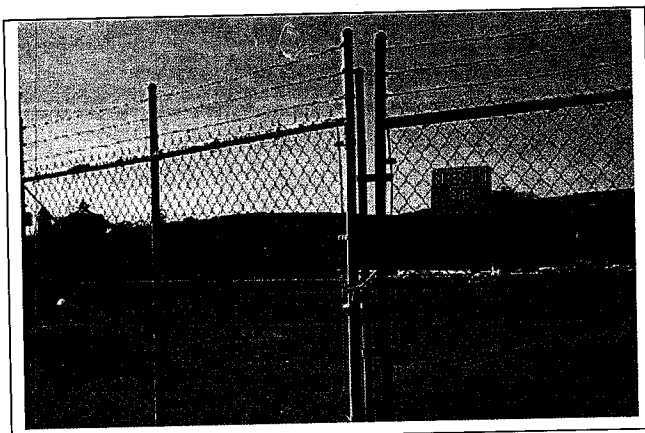


Photo 7. 'Superfund Site' signage on front gate.

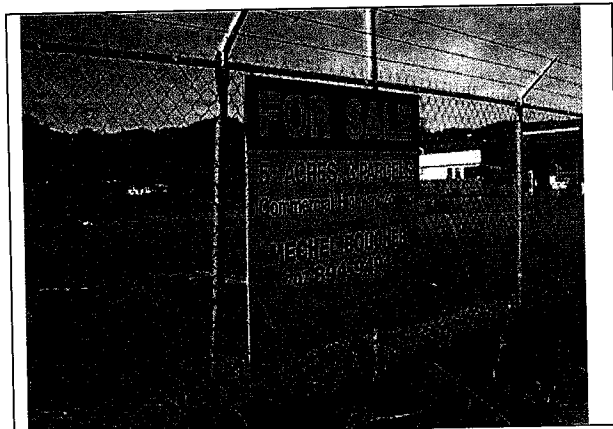


Photo 8. 'For Sale' sign beside S. Cloverdale Blvd.



Photo 9. Monitoring well B50 (TCE > 5 µg/l).

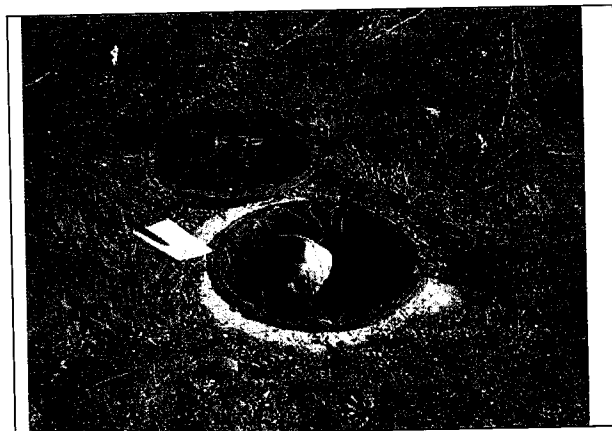


Photo 10. Monitoring well B73 (TCE < 5 µg/l).



Photo 11. Drainage ditch with abundant vegetation.

## **Attachment 4**

### ***Site Inspection Checklist***

## Site Inspection Checklist

I. SITE INFORMATION													
<b>Site name:</b> MGM Brakes Superfund Site	<b>Date of inspection:</b> February 8, 2008												
<b>Location and Region:</b> Cloverdale, Sonoma County, CA; USEPA Region 9	<b>EPA ID:</b> CAD000074120												
<b>Agency, office, or company leading the five-year review:</b> USEPA Region 9	<b>Weather/temperature:</b> Sunny, calm, 50-deg F												
<b>Remedy Includes:</b> (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input checked="" type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other _____	
<input type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other _____													
<b>Attachments:</b> <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
<b>1. O&amp;M site manager</b> _____ <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone      Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													
<b>2. O&amp;M staff</b> _____ <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone      Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													
<b>3. Local regulatory authorities and response agencies</b> (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.  Agency _____ Contact _____ <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>Name</span> <span>Title</span> <span>Date</span> <span>Phone</span> </div> Problems; suggestions; <input type="checkbox"/> Report attached _____ _____													
<b>4. Other interviews (optional)</b> <input type="checkbox"/> Report attached.													
No interviews were conducted except that site inspection participants, including PRP Consultant's groundwater sampling Project Manager and State's RWQC Board Representative, were questioned during the site walk.													



III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	<b>O&amp;M Documents</b> <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
Remarks <u>Because the only site activity is semi-annual groundwater sampling, no documents are kept on site due to their being no permanent remedial presence on site. No formal Operation &amp; Maintenance is being conducted except periodic inspection of well conditions, access controls, and PRP mowing of site.</u>			
2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
Remarks <u>Groundwater monitoring conducted on site follows the health and safety requirements stated in the 1991 RA Health and Safety Plan.</u>			
3.	<b>O&amp;M and OSHA Training Records</b>	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
Remarks <u>OSHA training records kept by PRP Contractor, Erler &amp; Kalinowski, Inc., at their office in Burlingame, CA</u>			
4.	<b>Permits and Service Agreements</b> Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
Remarks _____			
5.	<b>Gas Generation Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks _____			
6.	<b>Settlement Monument Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks _____			
7.	<b>Groundwater Monitoring Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
Remarks <u>Kept by PRP Contractor, Erler &amp; Kalinowski, Inc., Burlingame, CA, and USEPA Region 9.</u>			
8.	<b>Leachate Extraction Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks _____			
9.	<b>Discharge Compliance Records</b> Air Water (effluent)	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
Remarks _____			
10.	<b>Daily Access/Security Logs</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
Remarks _____			

#### IV. O&M COSTS

1. **O&M Organization**
- ☐ State in-house
 ☐ Contractor for State  
☐ PRP in-house
 ☐ Contractor for PRP  
☐ Federal Facility in-house
 ☐ Contractor for Federal Facility  
☐ Other O&M costs are not entirely applicable, as the site is undergoing long term remedial action with respect to groundwater and no systematic O&M is required. However, the remaining monitoring wells are inspected upon sampling and should be maintained to prevent unauthorized access and to ensure sample integrity.

2. **O&M Cost Records**
- ☐ Readily available
 ☐ Up to date  
☐ Funding mechanism/agreement in place  
 Original O&M cost estimate \_\_\_\_\_ ☐ Breakdown attached  
  
 Total annual cost by year for review period if available  
  
 From \_\_\_\_\_ To \_\_\_\_\_ ☐ Breakdown attached  
                     Date                      Date                      Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**  
Describe costs and reasons:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

##### A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A  
 Remarks An aluminum chain-link fence topped by three rows of barbed wire surrounds the MGM Brakes property. Two breaks in the fence large enough for human entry and egress were observed along the northern boundary; otherwise the fence was intact and in good condition. The two remaining wells are off the MGM property and are not within the fenced area.

##### B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A  
 Remarks Lock on front gate was present but unsecured. Sign on front gate stating "Superfund Site." Sign stating "Danger, Keep Gate Closed" on unused, locked NW gate. "For Sale" sign applicable to this property on site fencing fronting S. Cloverdale Blvd.

##### C. Institutional Controls (ICs)

1.	<b>Implementation and enforcement</b> Site conditions imply ICs not properly implemented <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span> Site conditions imply ICs not being fully enforced <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</span> Type of monitoring (e.g., self-reporting, drive by) _____ Frequency _____ Responsible party/agency _____ Contact _____ <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span>Name</span> <span>Title</span> <span>Date</span> <span>Phone no.</span> </div> Reporting is up-to-date <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</span> Reports are verified by the lead agency <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</span> Specific requirements in deed or decision documents have been met <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</span> Violations have been reported <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</span> Other problems or suggestions: <input type="checkbox"/> Report attached _____ _____ _____
2.	<b>Adequacy</b> <span style="margin-left: 20px;"><input type="checkbox"/> ICs are adequate</span> <span style="margin-left: 20px;"><input type="checkbox"/> ICs are inadequate</span> <span style="float: right;"><input type="checkbox"/> N/A</span> Remarks _____ _____ _____
<b>D. General</b>	
1.	<b>Vandalism/trespassing</b> <span style="margin-left: 20px;"><input type="checkbox"/> Location shown on site map</span> <span style="float: right;"><input checked="" type="checkbox"/> No vandalism evident</span> Remarks <u>Although no vandalism was evident, unlocked front gate and two breaches in fence allow entry onto site. Also, two monitoring wells in use are outside the site fence line.</u>
2.	<b>Land use changes on site</b> <span style="margin-left: 20px;"><input type="checkbox"/> N/A</span> Remarks <u>The site use is the same as for the last FYR; it is a vacant lot that is for sale.</u>
3.	<b>Land use changes off site</b> <span style="margin-left: 20px;"><input type="checkbox"/> N/A</span> Remarks <u>Development continues to occur on nearby off site property. A gas station and small commercial strip mall have been built east of the site since the last FYR.</u>
<b>VI. GENERAL SITE CONDITIONS</b>	
<b>A. Roads</b> <span style="margin-left: 20px;"><input type="checkbox"/> Applicable</span> <span style="float: right;"><input checked="" type="checkbox"/> N/A</span>	
1.	<b>Roads damaged</b> <span style="margin-left: 20px;"><input type="checkbox"/> Location shown on site map</span> <span style="margin-left: 20px;"><input type="checkbox"/> Roads adequate</span> <span style="float: right;"><input type="checkbox"/> N/A</span> Remarks <u>No roads exist within the MGM Brakes site. South Cloverdale Blvd. and Donovan Road are the two public streets abutting the site.</u>
<b>B. Other Site Conditions</b>	

Remarks The site is an open grassy field which appeared to have been mowed last in late fall. Minor amounts of rubbish exist on site (i.e., plastic bottles, pieces of tarp, polystyrene cooler, nylon tent parts) which appear to have been blown or tossed onto the site. Minor stressed grassy vegetation was observed, likely caused by temporary rubbish coverage (i.e., tarp pieces).

**VII. LANDFILL COVERS** ☐ Applicable ☒ N/A

**A. Perimeter Ditches/Off-Site Discharge** ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident  
 Areal extent \_\_\_\_\_ Depth \_\_\_\_\_  
 Remarks Concrete-lined drainage channels exist adjacent to and within the fence line of the site to the south and east.

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A  
☐ Vegetation does not impede flow  
 Areal extent \_\_\_\_\_ Type \_\_\_\_\_  
 Remarks Moderate to heavy vegetation in drainage channels likely impedes flow; small cracks in concrete observed.

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident  
 Areal extent \_\_\_\_\_ Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

4. **Discharge Structure** ☐ Functioning ☐ N/A  
 Remarks \_\_\_\_\_

**VIII. VERTICAL BARRIER WALLS** ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident  
 Areal extent \_\_\_\_\_ Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

2. **Performance Monitoring** Type of monitoring \_\_\_\_\_  
☐ Performance not monitored  
 Frequency \_\_\_\_\_ ☐ Evidence of breaching  
 Head differential \_\_\_\_\_  
 Remarks \_\_\_\_\_

**IX. GROUNDWATER/SURFACE WATER REMEDIES** ☒ Applicable ☐ N/A

**A. Groundwater Extraction Wells, Pumps, and Pipelines** ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**  
☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☒ N/A  
 Remarks \_\_\_\_\_

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**  
☐ Good condition ☐ Needs Maintenance  
 Remarks N/A

3.	<b>Spare Parts and Equipment</b>	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks <u>N/A</u>
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	<b>Collection Structures, Pumps, and Electrical</b>	<input type="checkbox"/> Good condition <input checked="" type="checkbox"/> Needs Maintenance Remarks <u>Moderate to heavy vegetation in passive drainage channels. Pumps and electrical – N/A.</u>
2.	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks <u>N/A</u>
3.	<b>Spare Parts and Equipment</b>	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks <u>N/A</u>
<b>C. Treatment System</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
<b>D. Monitored Natural Attenuation</b>		
1.	<b>Monitoring Wells</b> (natural attenuation remedy)	<input type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Groundwater remedy is monitored natural attenuation. Well B50 was locked but the steel protective casing was not water-tight and caused rainwater to pool above the level of the inner well casing. Well B73 had a cap with lock in place but the cap wasn't expanded sufficiently to prevent the cap with lock from being pulled off the inner well casing.</u>
<b>X. OTHER REMEDIES</b>		
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction. <u>N/A</u>		
<b>XI. OVERALL OBSERVATIONS</b>		
<b>A. Implementation of the Remedy</b>		
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>The remedial action for soil is complete. The remedial action for groundwater is MNA which now requires semi-annual groundwater sampling for volatile organic compounds at two wells. Neither well is located within the physical site boundary of the property. Both are located approximately 50 to 75 feet southeast, and hydraulically downgradient, of the site. Since the last FYR all monitoring wells except the two aforementioned have been decommissioned in accordance with State and Sonoma County regulations.</u>		

<b>B.</b>	<b>Adequacy of O&amp;M</b>
<p>Describe issues and observations related to the implementation and scope of O&amp;M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>The site is undergoing long-term remedial action with regard to groundwater monitoring. There are no O&amp;M processes in place at this time. Because the two existing wells are accessible to the public, maintenance of the wells should be included as part of the semi-annual sampling. One well was not secured at time of site visit and the other well contained pooled rainwater that would enter the well casing if the cap were removed. These issues could potentially affect groundwater analytical quality.</u></p>	
<b>C.</b>	<b>Early Indicators of Potential Remedy Problems</b>
<p>Describe issues and observations such as unexpected changes in the cost or scope of O&amp;M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>TCE concentrations slowly continue to decline. Reduction in number of wells, sampling frequency, and sampled analytes have reduced monitoring costs. There is no indication that the remedy could become unprotective in the future.</u></p>	
<b>D.</b>	<b>Opportunities for Optimization</b>
<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>Considering the near-asymptotic rate of TCE decline in well B50 since about 1999, an opportunity may exist to expedite the lowering of TCE around B50 to below the regulatory limit in a shorter timeframe by injecting an amendment in this area. In light of the existing low concentration of TCE and its presence above regulatory levels in just a single well, the cost of such an action may outweigh the benefit of reduced groundwater monitoring timeframe. Other than this consideration, no opportunities for optimization are noted at this time.</u></p>	

## **Attachment 5**

### *Institutional Controls Review Memorandum*

## MEMORANDUM FOR RECORD

SUBJECT: Institutional Controls Review, MGM Brakes Superfund Site, Second Five Year Review

PREPARED BY: Rebekah Barker, Environmental Engineer, Seattle District, U.S. Army Corps of Engineers

Date: April 11, 2008

### Introduction and Purpose

Seattle District, U.S. Army Corps of Engineers (USACE) is assisting the U.S. Environmental Protection Agency (EPA), Region 9, with the completion of statutorily required Five Year Reviews. Institutional Controls (ICs) comprise part of the site remedy and its protectiveness; therefore, one of the steps in evaluating the implemented remedy for the period of interest is a review of the particulars of the ICs. The goal of this review is to determine if the ICs were implemented as designed, and remain in place as implemented, while continuing to provide protectiveness as designed through limiting land use and minimizing potential for human exposure to contamination remaining at the Site.

### Background

Currently, the primary media of concern is groundwater, and the only chemical in the groundwater above the federally promulgated Maximum Contaminant Level (MCL) since October 2003 has been trichloroethene (TCE). Soil became a lesser media of concern as a result of the soil excavation and removal action in 1993 which was carried out mainly due to the presence of unacceptably high levels of polychlorinated biphenyls (PCBs) in the soil. A relatively small percentage of subsurface PCB contaminated soil was left in place in areas where shallow bedrock prevented excavation below 15 feet in depth, preventing a soil classification of unlimited use and unrestricted exposure. An Explanation of Significant Differences (ESD) was issued by EPA to address the PCB contaminated soil left in place at the Site. A Covenant and Agreement to Restrict Use of Certain Property (C&A) was executed by the California Department of Toxic Substances (DTSC) and the owner of the Site in an effort to prevent contact or exposure to the remaining PCB contaminated soil, and was filed with the Sonoma County Recorder's Office in July 1995.

The following list is a compilation of all project-related documents reviewed in support of the ICs assessment:

- MGM Brakes Superfund Site Record of Decision (USEPA Sep 1988),



- MGM Brakes Superfund Site Explanation of Significant Differences (USEPA Aug 1995),
- First Five-Year Review Report for MGM Brakes (CH2M Hill/USEPA Sep 2003),
- Covenant and Agreement to Restrict Use of Certain Property (McCutchen, et al. Jul 1995)
- Deed of Property Ownership, Cloverdale Property LLC, 2000, Sonoma County, CA #2000-037-674. Sonoma County Recorder's Office, Santa Rose, CA.

#### Institutional Controls Assessment

The ICs, in the form of the C&A, are in place and are legally enforceable. The enforcement agency is DTSC. There have been no recordings or known excavation activities which would be in breach of the C&A. The property owners are complying with the ICs. Though the property is currently for sale, the restrictions in the C&A have been designed to "run with the land," so that any purchaser or occupant of the property would be legally bound to comply with these restrictions. Information regarding the use restrictions must also be legally disclosed by the owner/seller to any purchaser or lessee of the property. In addition, the C&A requires the owner of the property to report to DTSC 30 days in advance of any planned excavation activities, and within 30 days following any sale of the land.

A title search was performed at the Sonoma County Recorder's Office in order to confirm that the C&A is on file. These documented restrictions are linked with the title and deed of the property by parcel number (Parcel No. 45), and are also accessible by an ownership search referencing TBG, Inc., as the land owner.

There are no formal ICs for the contaminated groundwater, because the information available to EPA indicates that no use is made of the water in this aquifer. Nevertheless, as a precautionary measure, in the event that there is a proposed use of this groundwater, EPA has advised the Sonoma County Department of Health (SCHD) to deny any permit application seeking to drill a well into a contaminated portion of the aquifer. EPA also remains confident that natural attenuation will succeed in bringing the TCE level in the groundwater to below the established MCL.

#### Conclusions

The ICs remain adequately protective of public health and the environment. The ICs are in place, and are being adhered to by the owner of the Site. Since PCB contamination remains in the soil in several locations 15 feet or more below ground surface, the ICs are designed to prohibit excavation at the property unless certain safety measures are undertaken, including soil sampling, protection of workers, and proper clean-up of contamination, if necessary. In addition, provision exists in the C&A requiring the owner of the property to contact DTSC 30 days prior to any planned excavation at the Site, and within 30 days after the closing of any sale of the property. DTSC has the necessary authority to enforce the restrictions in the C&A.

There are no formal ICs which pertain to groundwater contamination. Since there is no known use of this aquifer, there is presently no need for such restrictions. In the event that there is a proposed use of groundwater in any portion of the aquifer where contamination remains above an established MCL, the SCHD has been instructed by EPA to prohibit such use.